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ABSTRACT

Expert reports about integrated learning (IL) and vocational-technical education (VTE) activities in Organisation for Economic Cooperation and Development (OECD) English speaking member countries, on France, the Netherlands, Denmark, Germany, Portugal, Finland, papers of the relevant OECD seminars in Phoenix, Arizona, and in Marseille, France were reviewed and synthesized. The synthesis focused on the following topics: aims and motives of IL in the context of history and educational policy, IL at the macrolevel of schools and training centers and at the intermediate level of educational pathways, and IL at the microlevel of learning and teaching in selected OECD countries. Although the exact definition of IL varied slightly in the different countries examined, in most countries discussion of IL concentrated on two topics: (1) reform and renewal of educational approaches in schools where rigid subject boundaries are broken down and schools are opened up to the real world; and (2) adoption of new teaching methods concentrating on exploiting students' potential and building pathways to work. Educational conditions were found to be generally unfavorable to IL for several reasons, including the frequent absence of collective responsibility for education and training by both firms and schools and reinforcement of traditional views by institutions. It was recommended that school systems work to develop systems of IL that will overcome the rivalry and separation between VTE and general education. (Contains 10 references.) (MN)

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THE CHANGING ROLE OF VOCATIONAL AND TECHNICAL EDUCATION AND TRAINING
(VOTEC)

NEW APPROACHES TO INTEGRATED LEARNING

SYNTHESIS REPORT

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(Note by the Secretariat)

1. The attached document is a synthesis of expert reports prepared in the framework of the VOTEC activity on "New approaches to integrated learning".
2. The synthesis report was written by Professor Andreas Gruschka, University of Essen, Germany.
3. The report is presented as a contribution to the high level conference on "Vocational education and training for the 21st century -- opening pathways and strengthening professionalism", which takes place on 28 -- 30 November 1994 at the OECD in Paris.
4. The report is distributed for information.

Summary

Professor Andreas Gruschka, New Approaches to Integrated Learning

1. Western countries have inherited from Greek civilisation a deeply rooted dichotomy of "culture" and "work". This has caused "theory" to be opposed to "practice" and "thinking" to be dissociated from "doing" throughout the history of education in these countries. The place which vocational education and training occupy today in different education systems and at the interface between education and employment reflects this initial schism as well as the ways by which societies have tried to overcome -- or live with -- traditional barriers and perceived incompatibilities between academic "knowledge" on one side and occupational "competence" on the other. And it indicates the place and role of young people in different economies and societies.

2. The attached report discusses integrated practical and theoretical learning in the context of vocational education and training. It is a work of synthesis and meta-analysis that draws on reports on the English speaking countries, on France, the Netherlands, Denmark, Germany, Portugal and Finland, and the papers of the relevant OECD seminars in Phoenix, USA and in Marseille, France. Proceeding from the observation that vocational training is seldom regarded as satisfactory, the author investigates how to guarantee high quality vocational training while promoting integration in the whole education system and, at the same time, developing appropriate teaching and training methods.

3. Discussion of integrated learning concentrates on reform and renewal of educational approaches in schools where rigid subject boundaries are broken down and schools are opened up to the real world, where practical competencies as well as school-based knowledge are emphasized.

4. A second focus is new teaching methods that seek to better exploit students' potential and build "pathways to work". New organisational structures are a further concern, especially where they involve groups heretofore without direct contact with the world of work. In some cases, new methods and new structures have been introduced simultaneously, and reforms have been applied to systems that previously seemed unlikely candidates for integrated learning. "Narrowing the gap between academic and vocational education" is an objective across the board, whether integrated learning is offered to high achievers or to problem groups.

5. The report observes that educational conditions are generally unfavourable to integrated learning. Most significant is the frequent absence of a collective responsibility for education and training by both firms and schools. Traditional views are frequently reinforced by institutions. The author uses the distinction customary in Germany between "internal" and "external" school reform to explore these tensions.

6. Rather than aiming at a comprehensive portrayal of diverse projects undertaken in various countries, the report seeks to explore common problems, the ways these problems can be solved and perceptions about the solutions. It begins by highlighting various conditions for integrated learning and proceeds to a critical elaboration of the pedagogical prerequisites of the call for integrated learning. How integrated learning manifests itself at the various levels of an educational system and what impact it has on teaching and learning conditions in the OECD countries are the subject of chapters 3 and 4.

7. While the words "integrated learning" are often used to the same end and in the same contexts around the world, their exact definition and interpretation vary somewhat. Indeed, the author sees integrated learning as a normative formula, rather than as an empirical or empirically-established category. With this in mind, he criticizes the absence of a fully-developed educational culture of integrated learning in OECD countries and reflects on the significance of this failing.

8. The questions guiding the report proceed from the aims of the OECD itself. The author concludes that in order to serve the interests of democracy in societies organised on market economic principles, integrated learning should not separate and select. It should, instead, contribute to equality of opportunity. While the majority of the projects covered by the report are oriented towards this goal, they take place in a context where they may ultimately only smooth the way for new inequalities.

9. Integrated learning should not perpetuate the opposition between vocational and general education, but should be able to break up both of these. Many projects are motivated by such a desire to overcome the separation between the vocational and the academic, though the flexibility of the term "integrated learning" may contribute at times to a devaluing of vocational education.

10. Overcoming the opposition of theory and practice should, according to the views expressed in this report, be the central theme of integrated learning. The lack of reflection on this theme is regarded as evidence of a hostility to theory and a residual narrow utilitarianism in vocational education. This report aims to contribute to a more positive approach to both, theory and practice.

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1. Introductory Remarks

1. Under the heading Integrated Learning the OECD is making various efforts, by means of international comparisons, to promote the further development of vocational education and training. Whereas the Votec seminar in Marseille was conducted under the title "Apprenticeship, alternance, dual system: dead-ends or highways to the future?" and therefore related primarily to organizational models of preparing individuals for jobs and professions, this comparative report takes as its topic the problems of gaining vocational qualifications from the point of view of the curriculum and the theory of teaching and education. Integrated learning aims directly at those in training and therefore refers principally to the teaching and learning process. Whereas the Marseille seminar was more concerned with questions about the system itself, in this report pedagogical models of integration are in the foreground.

2. Behind this apparent double perspective is concealed in fact the task of vocational training, a task which up till now has relatively rarely been carried out satisfactorily. At issue is the problem of guaranteeing good vocational training with the help of structures that promote integration in the context of the whole education system. At the same time teaching and training methods have to be established which meet the needs of these structures. Both levels - the methodological and the structural - refer to one another, indeed are mutually dependent. Measures to reform the vocational education system take as their starting point actual or assumed dissonances between the two levels. It is then either a matter of optimizing teaching and training methods, principally therefore of improving the way in which knowledge and action are imparted, of teaching and praxis, or it is a matter of changing the relationships between general and vocational educational paths.

3. Discussion of integrated learning in this report concentrates on the following aspects, according to the situation of the individual member states of the OECD:

- the reform and renewal of educational approaches aiming at the development of all human abilities in general and vocationally-oriented secondary schools by breaking down rigid subject boundaries and opening schools up to the real world. In other words, what is known as "learning by locating it in realistic settings" in the USA and in Germany, that is, orienting education towards practical competencies rather than solely towards school-based knowledge.
- the development of new teaching methods of integrated learning to ensure that the potential for gaining qualifications, something that often, as it were, lies dormant within the organizational structure of vocational educational pathways, is better exploited than has been the case in the past. Here we shall be referring to the modernization of the dual system in Germany by means of action-

oriented teaching, that is, teaching methods as a means to building "pathways to work".

- the creation of new organizational structures in order to give opportunities for integrated learning for the first time to groups which up to now were taught without direct contact with the world of work. Examples are the experiments with alternance in France and the vocational high schools in Australia.
- the attempt to deal with both aims with a single measure, as in Switzerland, where the creation of dual-qualifying educational pathways has meant the creation of a whole new branch of education. This has, in turn, been supported by new integrated teaching and training methods.
- the reforms take as their starting point systems which until now have seemed unlikely candidates for integrated learning and which now are to be transformed by it. Examples would be what Vickers refers to in the USA as "narrowing the gap between academic and vocational education" by implementing vocationally-oriented curricula in high schools or the attempts in Finland to diminish the difference between general and vocational education in institutions which offer a general education.
- the targeting of tailor-made programmes of integrated learning at groups which find difficulty in slotting into the labour market. Specific examples here derive from the Netherlands and Denmark.

4. Many of the projects on which this report is based show that the external educational conditions necessary for integrated learning to take place are often lacking. Most significant among these is the frequent absence of a collective responsibility for education and training by representatives of the two learning sites, the firm and the school. They also show how difficult it is to modify a traditional view of teaching and learning in favour of a new one, when the traditional view is fixed and stabilized by the structure of the institution and the way it sees itself - be it a general or vocational school. For example, this occurs whenever teachers are supposed to prepare students for a profession which they themselves have not mastered and are supposed to do this in a school which does not demand and promote the professionalism of practitioners, but that of academics with a socialization confined to their own subject. This pattern may be observed in the reforms in US high schools. At the same time, other examples, like that of the new high school in the State of Victoria in Australia, show that a path may be pursued through internal reforms in schools and teaching to a successful transformation of the external structures. This happens when teams of teachers from the various systems to be integrated work together on developing new curricula and thereby establish a new educational structure.

5. Positive references to the opportunities for integrated learning provide a strange contrast to the many statements regarding the difficulties which accompany the corresponding reforms. Countries which take new paths - like Australia for example - reflect differently on both aspects. They are more optimistic and also expect more from the changes than countries whose

vocational education structures are venerated, at times rather self-righteous, and in general little discussed.

6. In the German tradition, there is a customary distinction between internal and external school reform. The latter refers to changes in school structures, the former to teaching reforms in the narrower sense. If reformers on the one side of this distinction - for example on the side of structural reform - fail to make progress with their reforms, they find the reason for this failure in the tendency of teachers to persist in their established teaching methods. On the other hand, reformers often embark on programmes of internal reform half-expecting the structural reform to follow automatically. The two levels are frequently played off against each other and are closely related. The national reports deliver salutary lessons both on the various reform strategies available and on the rationalizations that are given when the strategies do not achieve their goals (see, in particular, the examples from Finland and the Netherlands).

7. These few introductory remarks alone make plain how diverse are the problems and patterns for solving them that have been devised in the OECD countries. From this it might be deduced that this report will aim to portray as much of this diversity as possible. A comparative report which showed what can be done, what kind of productive solutions have been developed, but also what does not work and what could be learned from all of this, would indeed be an extraordinary source of inspiration. However, this report will not provide such an overview but will define another perspective, for the impression the reader of the individual national reports inevitably gains is that much more research would be necessary to provide such an overall perspective. The data available is too meagre to allow one to formulate representative statements about the state of integrated learning in the countries concerned. Nevertheless, the material does seem to offer a great deal of substance for meaningful statements in another way, that is, regarding the general problems, the ways those problems can be solved and perceptions about the solutions.

8. The report will concentrate on these aspects and proceed as follows:

- firstly, it will turn the spotlight on twelve aspects which reveal the historical, political, economic and educational-sociological conditions for integrated learning (chapter 2.1.);
- then it will make explicit the pedagogical prerequisites of the call for integrated learning and examine them critically (chapter 2.2.);
- on this basis it will ask how integrated learning manifests itself at the level of the macrostructure of an educational system and at the level of the intermediate structure of pathways through training and education (chapter 3);
- and finally it will also ask how integrated learning is displayed at the microstructural level of the teaching and learning conditions in the various OECD countries (chapter 4).

9. With regard to the practical illustrations the individual reports presented to the OECD cannot - for reasons of space - be summarized in such a way that reading the original documents would be superfluous. Instead,

chapters three and four attempt to give an introduction to the Four-Plus-Two national reports.

10. The task of this report is to synthesize individual reports and to offer a general meta-analysis. The reports refer to the English-speaking countries (GB, USA, Australia by M. Vickers), to France (by F. Ginsbourger), the Netherlands and Denmark (by E. Bruijn et al), Germany (by G. Kutscha), as well as to Portugal (by B. Cabrito) and Finland (by M. Volanen). In addition, further reference is made the papers of the OECD seminars in Marseille and in Arizona.

11. The attempt to apply a largely uniform formal structure to the national reports was less than successful. This in itself indicates one of the problems faced. Even if the general connotations of the term integrated learning for educational praxis are by and large the same around the world, the approaches to defining the term and filling it with meaning prove extremely varied. Even a cursory reading of the individual reports makes clear how differently the discussion of integrated learning is weighted towards educational methods or conversely towards a consideration of how teaching and training structures are derived from the level of integrated learning which has been achieved, that is to say to what extent it is seen as necessary to plan and justify new educational pathways by referring to real integrated learning as it functions within the curriculum.

- In Germany for example there has been a boom in recent years in the development of integrated learning models. They are supposed to prove that the structural reforms in education (the "New Order Debate" of dual education and training) with their noble aims, such as imparting the ability to work in a team, to make decisions, to plan and evaluate, can be realized by means of teaching models. With this in mind, many new teaching instruments have been devised to show how work and learning, activity and personal development can be combined.
- In contrast, the documents from France display curiously little interest in relevant educational models. Instead, they seem to be under the spell of educational crises and continue to discuss the still unsolved problem of vocational training under the rubric integrated learning, in other words, to discuss a problem widely regarded as already solved in Germany by the dual system - a point that has been made above all by outside observers.
- In the reports on Holland, the USA and Australia the writers are principally concerned with individual, promising new approaches to integrated learning, whether these be in individual model institutions or within regular schools. What the approaches have in common is the emphatic way in which they demand "competency-based learning" and "performance-based assessment" and turn against old-style word and knowledge-based schooling.
- In the report on Finland there is a retrospective view of what were in effect failed attempts at structural reform which combined general and vocational education. Where no (further) structural changes are

planned the reports offer a discussion of planned future pragmatic reform strategies.

- The Portuguese report reflects above all on the constitutional problems of a modern educational system in a period in which the country is consolidating its position within the EC.

12. The reader of the individual reports might well gain the impression from these main points derived from the national context that there was in these countries only a small and innovative avant garde of practitioners (educationalists and reformers). It was only rarely that efforts to show how new paths to integrated learning are being taken could be seen across the breadth of education and training patterns and on the spot in the various educational institutions. However, this impression is probably incorrect. Since one should take into account that integrated learning always represents a challenge to teachers and learners whenever learning and work, abstract knowledge and vocational practice, subjective desires and objective requirements are to be combined, there is much evidence that there are a whole host of examples of models and reforms beyond those presented in the reports.

13. Against this background the first chapter will first discuss in greater detail what one might call the social semantics of the issue, that is to say, the social element in the topics integrated learning in the national context and how exactly, beyond the differences in the individual definitions, some more general problem areas may be discussed and dealt with using integrated learning. In this way, where the specific discussions and plans are responses to comparable traditions, developments and current problems, it will be possible to identify the general meanings of integrated learning. These meanings will be taken up again and made more concrete at a later point in our analysis of the ways in which problems are solved in the reports from different countries.

14. The German report writer noted with astonishment that in many OECD countries the analyses and outline papers were drawn up mainly by organizational planners, administrators, lawyers, educational sociologists and the like, rather than by professionals in the narrower sense (teachers, educationalists). Obviously, there is a division of labour between the practising teachers and trainers, who have to make integrated learning a reality in their everyday work, and the structural researchers and educational policy-makers, who discuss outlines and plans at a general level. This perhaps explains why the undoubtedly diverse praxis of integrated learning, in particular the perspective from the bottom it promised (for example, the views of learners themselves), has such a lowly status in most reports. One might summarize the general impression as follows:

A fully-developed educational culture of integrated learning - beyond the readily-apparent slogans like "unity of learning sites", "integration of theory and practice" etc. - is something that still has to be established in the OECD countries.

15. This failing is something of a surprise and, in relation to the closing VOTEC-seminar in Paris, somewhat irritating, given that such a culture has already long existed in the general schools of many countries (see below).

16. One final preliminary remark: the difficulty of gaining an overview of the state of integrated learning is greatly aggravated the fact that, beyond the intentional pedagogical aspects of the concept, the question as to how individuals gaining qualifications organize their adjustment to the demands of work in reality, a question suggested by the whole nature of integrated learning, seldom plays a central role. There is little in the way of research on exactly how students become teachers, nurses or even electronic engineers. How do skilled workers integrate new demands into their existing competence, and how do they find opportunities to learn what is asked of them? What role does teaching in the sense of direct instruction play in this? It is a similar matter with other critical questions. What obstructions to the development of competence in skilled workers, assistants and so on in training may be ascribed to a lack of integrated learning? Where does integration in learning not take place because the assimilation of new ideas is blocked by old ones? The present report-writer suspects that this regrettable research situation results from the manner in which innovations in the field of integrated learning are planned OECD-wide. Typically, this is in an incremental fashion or according to the principle of letting everyone have a slice of the cake or giving impulses (incentives for those who take part in the USA, and, in addition, in the Netherlands, the use of "reform managers" to ensure that as many schools and teachers as possible get involved in the reforms) instead of setting up carefully controlled and evaluated educational experiments. (Only the German report relates experimental results of such model trials). The occupational and socio-political background of the projects and the search for quick ways out of acute crises are probably responsible for the fact that relatively little attention has been paid to the practical teaching conditions in which these projects are realized.

17. In most of the reports, therefore, it becomes quite apparent that integrated learning is in no sense an empirical or empirically-established category, but a normative formula. A great range of educational problems are supposed to be solved by means of integrated learning. How exactly this takes place or could be brought about at the level of teaching practice is something we know relatively little about. Sometimes the reader has the distinct impression that the path itself is the goal.

2. What does integrated learning mean and for what purpose is it discussed and planned?

2.1. Integrated learning in the context of history and educational policy - a first approach to aims and motives

18. Anyone wishing to clarify what integrated learning is may proceed inductively from its practice or might alternatively proceed deductively and ask on the basis of which social problems and requirements the training and education system deals with the aims of integrated learning. Both options are valuable insofar as both levels of the analysis can be made to refer to each other. The micro-level at which integration takes place or is supposed to take place, and the macro-level of the educational structure in relation to the occupational system of society as a whole.

19. The following passages move from the macro to the micro-level and as such are in keeping with the way in which, throughout the OECD, with few exceptions, calls for integrated learning according to perceived problem areas move from macro to micro and not vice versa. The handicaps that can arise if one behaves as though macrostructural problems can be resolved by reforms at the microstructural level, if one acts as though internal reforms alone make reforms of the external structure unnecessary are plain to see. In truth, an improvement to the basis of learning can only be successful insofar as it is accompanied by changes in the surrounding conditions.

20. In order to clarify this thesis, I shall first consider the two structural questions in education which are central to our concerns in this report:

1) Two structural questions in education

21. The educational systems in the reporting countries have obviously taken quite different historical paths. In particular, there have always been two questions that had to be answered:

- How long should a uniform schooling apply for all children (in other words, the extent of the concept of a compulsory general education) and
- what tasks should the state take over in the process of individuals gaining professional qualifications?

22. Even if the English-speaking countries have comprehensive schools, and Germany still on the whole maintains a selective school system, it may nevertheless be asserted that the organizational forms and the canon of general compulsory education have to a great extent grown closer together across national traditions. Even comprehensive school systems cannot dispense with

social differentiation and the effective selective determination of learning goals. Conversely, selective school systems have become far more porous than their critics are prepared to admit and perhaps more permeable than their apologists would wish.

23. In our context, it is a particularly significant fact that one of the distinguishing features of students' careers in general secondary schools up to the tenth class (age 16/17) is a possible or compulsory option of a vocational orientation. Students who expect to complete secondary school successfully and therefore prepare for a higher diploma or degree may dispense with the vocationally-oriented elements, indeed may often be excused from them. Students who learn less successfully have to attend such courses and are correspondingly released at an earlier stage from the kind of general education that the more successful students must continue with. This is true of the Portuguese system, and it is also true of the German variant of the comprehensive school (the Gesamtschule), as it is true for the three branches of German secondary schooling - the Hauptschule, Realschule and Gymnasium. It is also true of the American system, as report-writer Margaret Vickers puts it: "By way of contrast, in America, students are tracked into academic, general, and vocational programs at the end of the Middle School years, that is, at age 13 or 14. From the beginning of grade 9, vocational track students form a clearly distinguishable group in most high schools. Some states run separate technical high schools, but the great majority of America's high school students are enrolled in comprehensive high schools".

24. Against this background, all attempts to propagate integrated learning by means of new educational pathways or teaching innovations have to cope with a negative environment resulting from the fact that in all education systems an early confrontation with vocationally-oriented integrated learning was always connected with a selection of high achievers and poor performers - a confrontation that then set students on the road to "higher professions" and "mere jobs".

25. This division reflects the way in which, in the history of vocational training, the socially-determined opposition of education and training has seldom been tackled and overcome. The distancing in terms of content and status of education from training could only be achieved by tying training ever more tightly to the supposed "mere" purpose of the work it was associated with. It is said of repetitive tasks dependent on direction from others that they require relatively little formal education. Making someone able to do such jobs follows a simple pattern of introducing them to the task and instructing them in it, allowing them to imitate what has been demonstrated, and then giving them a chance to practise. In cases like this high-grade integrated learning, with its working through formal aspects like rules and models and attempts to apply theory to practice, is and always has been unnecessary. It is only at the higher levels of the professional hierarchy that such things are supposed to be necessary. And the best basis for acquiring such skills is said to be formal higher education with a theoretical rather than practical bias.

26. To this day, much of the arrogance of those who have received a higher education towards the non-intellectual activity of many workers derives from this division and differentiation. The hopes of many middle-class people that they will be properly "served" by the state education system have long been

rooted in the conviction that going through some form of higher education will, as it were, ensure that their own children never have to engage in such lowly work.

27. Integrated learning only has thoroughly positive connotations when associated with two aspects of education: in the workplace, when it is used by senior colleagues to solve high-grade problems, and in schools as part of broad education when vocational training has not yet begun. Integrated learning does not have to be associated with the seriousness of real life in "comprehensive" secondary education. Here integration is supposed to prove itself by allowing children who otherwise mainly learn in the abstract to do something practical. Traces of Pestalozzi's formula concerning the unity of head, heart and hand, Dewey's programme of practical "learning by doing" projects, Freinet's emphasis on work, or even the educational theory of the Waldorf schools may be found in the reforms in general compulsory schools. Such measures serve to open up schools reliant on written and spoken work to practical physical experience. In other words, they are designed to diminish the danger of over-intellectualization. Young people get to build kites or create a wildlife garden, they bake and make clothes - but all of these kind of things rarely have anything to do with what happens in the workplace.

28. As soon as the kind of practice which is designed to promote integrated learning becomes obligatory, whether it be in the German Arbeitslehre or in the "vocational prep-course" for the academically less able and above all in vocational training proper, the scale of values normally applied to it is suddenly turned on its head, particularly by those who have not benefited from this form of learning.

- Integrated learning is then not associated with the increased effort of an integration of "head, heart and hand".
- It is not presented as the more effective path to attaining knowledge and competence.
- Combining practical learning increasingly with theoretical learning in the interests of solving future problems, an idea urgently called for by social theorists, is not seen as a necessity.
- Instead integrated learning is primarily associated with the low status of the vocational work that it is supposed to serve.

29. On this point, it is particularly revealing that after describing the achievements of integrated learning in high schools the report on the USA goes on to wag a warning finger:

"Many American reformers believe that there is too much vocational education, or at least that high school voc-ed is the wrong kind of voc-ed, and that it starts too early. Curriculum reforms need to address the fact that traditional vocational track courses are narrow and occupationally-specific, while the core courses studied by vocational students are mainly watered-down versions of the academic courses studied by college-track students" (Vickers).

30. The exact form of state-administered or state-supported vocational training was also emphasized as a second vital point in the school system. As far as our topic is concerned there are two aspects here deserving of special attention:

- How does the state take responsibility for a vocational training system and responsibility for ensuring that training is organized in close co-operation with a future workplace?
- How does the state use the means at its disposal to raise the status of vocational training so that it will not be stigmatized as an inferior form of education? To put it more pointedly, should the state take on directly the way in which the division of labour forms hierarchies, or should it merely reflect those hierarchies in its system of qualifications?

31. Evidently, both questions are approached and answered quite differently according to one's national (should one say ideological or cultural?) predispositions. In the United States the great majority of citizens simply do not believe that it is the job of the state to intervene in the normative manner in which positions in the labour market are filled, that is to say in the manner in which they form hierarchies of "status and position". This remains true despite the fact that in the USA state authorities perceive a need for qualitative correction in educational policy. In most OECD countries policies on vocational education respond to the market-led needs of the occupational system. In contrast, developments in Portugal after 1974 show how politics in general influence the aims of education. Freeing the country from the consequences of the dictatorship was associated with the demand that old social hierarchies be overcome. One means to this end was an equal right to education, interpreted to mean a right to higher education. In France the predominant experiences are (still) those which derive from a centralizing education policy delivered by the government. In this case, the worsening conflicts surrounding the target quota of 80% of students achieving a "baccalauréat" show the direct clash of economic and political aims. Business leaders complain increasingly that students' training does not meet the needs of the workplace, that there is a lack of qualified skilled workers. The state in turn sees itself called to upgrade the vocational "baccalauréat" to give, at least in formal terms, the same prestige to education and vocation, even though by doing this the danger arises that the vocational "baccalauréat" is awarded the lowest position in the "unofficial" hierarchy that is already in use to distinguish between different varieties of general "baccalauréat".

32. In all countries one can see a tense "bargaining" of interests in respect of the other dimensions of vocational education policy between the two partners (school and economy). In various patterns this "bargaining" runs through the entire modern history of vocational education.

33. In the Netherlands "important leading business figures" - as the report puts it - were involved in the planning of vocational education after a careful and sustained recruitment phase. However, the success that resulted, the clear rise in the dual form of training, collapsed with the advent of the economic crisis. One learned that there can be no dual system of integrated learning without a readiness to train and a readiness on the part of the trainees to take up the offer of a training place!

34. No report mentions the state having deployed huge resources to push through rights to training and work against the interests of companies. Seldom do the reports mention firms determining their management goals in relation to the future training and retention of their workforce. In other words, they

seldom mention how they will build into their company policy measures to ensure integrated learning. The dual system in Germany represents one exception to this rule, albeit one with a limited applicability. In times of crisis it is up to those who hold positions of responsibility in institutions to stand up for the established training structures by applying political and public pressure. Even in Germany however the state fights shy of obliging business to train workers, checking the quality of its work and urging it to take up its full socio-political and economic responsibility. Work is not some civil right guaranteed by the state. Against this background full-time school versions of vocational training often turn into a poor compensation for insecure job prospects.

2) Objections to integrated learning beyond the rhetoric

35. The concrete conflicts of interest which result from these problems are only reported at the margins. In their place, the national reports depict many of the rhetorical and ritual forms of debate which serve time and again to cover up the conflicts rather than to address them. For example, in countries with apprenticeship schemes company representatives are repeatedly reported as being sceptical as to whether it really is a good thing for vocational qualifications to cover the capacity for analysis and criticism. "Is that not a sign of too much emphasis on school-learning?" they say, "And isn't it better to stress sound practical abilities?" Objections are also raised whenever, under the aegis of integration, traditional elements of general education are to be incorporated more substantially into vocational training. The things that are regarded as indispensable for students in conventional higher education are rapidly placed at the disposal of vocational students: sport and politics of course, but science and foreign languages too. The part of vocational training that takes place in school is often looked upon with just as much suspicion by companies as schools display towards the work without training that the companies demand from students. The internal logic that learning follows in practice, especially at work, and the logic that characterizes school learning (cf. the excellent report by Senta Raizen) is little analysed. Such an analysis would show integrated learning as an organized interaction between meaningfully divided and various elements. Instead, a series of irresolvable contradictions as to what constitutes quality is handed down for both learning sites, school and firm.

36. The label "integrated learning" hides these problems more than it helps to overcome them. This is an apparent struggle for student time between companies and colleges. Company representatives see any expansion of formal courses first and foremost as a senseless over-emphasis on the academic side of learning. Teachers see any reduction in classroom hours as a threat to the qualification and indeed to education itself; for them work does not equal learning, or at least it is a far inferior way to learn. Even where training involves a partnership between firms and schools, integrated learning is more a matter of trading interests off one against the other than of negotiating an optimal division of labour to achieve a gain in competence for the student.

37. One might therefore expect that within the debate on integrated learning attention would be focused without exception on the practice within companies and schools, on the search for what "works" and on concrete obstacles and constraints. However, this is not the case. Integrated learning is appealed to in the face of the structural problems prevalent in each respective

discussion. There are for example great differences between a country like Switzerland, with its low percentage of students gaining their Matura and its low unemployment rate, and countries like France, Finland or Portugal, which have very high percentages of students qualifying at age 18 and high rates of unemployment. A country like Germany, which has a well-established and widely-supported dual system, can concentrate more confidently and decisively on internal reforms, even if the dual system (our number one export) has in the meantime come in for much fierce discussion (see below). In countries like France or the USA, where a disintegration of learning and work, or rather learning and work sites, already predominates, structural questions inevitably come to the fore in debates about integrated learning. In view of the uncertainty about what can be shifted at all in terms of structures - with the stability of a differentiation into "higher" and "lower" forms of education - many discussions end up as storms in a tea-cup and seldom lead to practical changes as a result.

38. This uncertainty is reflected in all the reports. Often, rather than characterizing a general change in schooling and training, integrated learning functions more as a guiding idea, and projects serve more as illustrations of approaches to educational reform that extend to various levels of practice. The reports on the Netherlands and Denmark describe how the reform agencies there (they call themselves "task forces") attempt to win over the instructors, who are autonomous in questions of teaching methods and school subjects, by means of small reforming measures and projects to gain their support for an integrated training. The idea is that such reforms "from the bottom" - in the courses at individual schools - will serve to create a basis for changes "at the top". In recent years thousands of vocational training instructors have gathered numerous times at conferences of the German Federal Institute for Vocational Training in order to discuss the intermediate results of a successful revision of the dual system towards integrated learning through a discussion of concrete training experiences. Hardly was the ink dry on the pages of the conference papers than, with the sudden change of the macro-economic climate, everyone was talking of the crisis in the dual system. Suddenly large companies were claiming that training was too expensive. There was a visible collapse in the number of training places and a distinct fall in the take-up of students completing their training. Alternatives were sought; many even prophesied the end of the dual system. Managers began to look across to France and wonder aloud whether a programme of educational pathways in full-time school that was severely limited in vocational profiles might not offer a less expensive way of recruiting qualified personnel. With the retreat from the dual system the state would clearly take over more of the costs of training, businesses would be responsible for specific training in skills directly relevant to the workplace. Thanks to the consolidation of the economy in 1994, the voices of those warning about the tasks that face the dual system are again making themselves heard. They remind us that we should now be recruiting the skilled workers of the year 2000, and they can only be recruited by the dual system. "Integrated learning" is also enjoying a boom of its own again, as it promises to rescue the whole system. Now, however, the emphasis is on dual qualifications and dual entitlement. The rapid changes in the debate draw attention to how sensitively educationalists react to the seismic shifts in the economy, and how well suited integrated learning is as an all-purpose weapon.

39. For example, in France it is a common view that only by adapting the dual system will students completing vocational training have better prospects of integrated learning and ultimately of finding a job. That firms prefer to take on someone trained in-house rather than an outsider is cited as an advantage. On the other hand, some refer to the most recent experiences of inappropriate qualifications achieved through dual training and urge that we should concentrate incentives on measures to integrate young unemployed people into jobs.

3) Qualification - Quality and Quantity

40. For its champions integrated learning includes the whole catalogue of demands associated with vocational education policy. At present the concept is mainly supposed to resolve frictions (contradictions, dissonances, conflicts) in the education and training system, which arise from the contradictions of hierarchically-structured, that is to say, not truly integrated secondary school systems, especially where these are not able to ensure a largely conflict-free fit between the output of the training system and the expectations that the occupational system has of a qualified workforce. The contemporary relevance of the topic comes from the fact that people no longer trust traditional patterns of training to resolve the structural problems that have become apparent.

41. The rhetoric of educational policy concerns itself principally with agreed deficits in qualification within individual educational pathways. Two things are asserted. Firstly, that the existing education and training paths no longer equip young people with the ability to deal with the changing work environment. Secondly, that the educational tracks that these same young people take often lead in the wrong direction: school leavers increasingly hold qualifications that lead nowhere. They are seen as having learned things that are of little use to them in fitting into the world of work, and above all they are seen as lacking the appropriate behavioral patterns required by the modern workplace. Training structures must be changed in such a way that young people are again more motivated to learn. This however presupposes that they are treated seriously as independent and responsible human beings. They should and would not want to be mere consumers of education and training any more, but instead they should take on an active role by examining what is on offer and selecting what they need to determine their own learning process. In the English-speaking countries the concept of "pathways" has emerged from this kind of thinking; in Germany or Denmark "action-orientated teaching", in which the student has to work independently has been the result.

42. In this context integrated learning serves as a comprehensive code word for the form which reform of training is supposed to take. By means of integrated learning students are to acquire the interpretative habits, professional attitudes and patterns of behaviour (for example, the ability to plan ahead and to work in a team) whose absence businesses from Portugal to Denmark, from Germany to the USA assume to be the main obstacle to further modernization. However, since the ideal new employee cannot possibly be delivered in his or her fully developed form directly from training, the frequent complaint that young people are not sufficiently well-qualified is sometimes somewhat superficial. Business uncertainties about the appropriateness or otherwise of new employees have their origins mainly in severe quantitative failings. The education system as a whole has become so

complex, the various pathways are now so tortuous, that employers are more and more frequently failing to find and place qualified workers. These problems may be itemized as follows:

- Academic track courses are in the middle of an over-subscription crisis.
- Many young adults who have received a good general education reach the end of their training period without any worthwhile professional qualification.
- Old professions are disappearing, and yet the path into the new professions is not yet a clear one because the education and training system has not taken account of them or has only done so belatedly.
- Parallel supply and demand bottlenecks make the labour market impossible to analyse.
- In many professional fields the wrong young people are being trained,
- and in many there is a chronic over-supply of trainees.
- Among these there are so many poor achievers that smaller firms are beginning to worry about the quality of their products and services.
- Young people who are not inclined towards any particular profession hope to find orientation in pre-vocational programmes and find themselves instead stuck in a holding pattern.
- Finally, the unsolved problem of those left out of the whole system (the unemployed) is a burden on the socio-political conscience.

43. It is by and large an unanswered question how and to what extent vocational qualifications lead to employment in a market economy if the existing companies do not express any demand for further employees. Nevertheless, integrated learning is often recommended as an instrument towards the following ends:

- reducing oversubscription by changing the way students are trained. Examples are to be found in the career orientation programmes and programmes leading to qualification for and integration into specific occupations in the secondary and tertiary sectors in the USA.
- relieving shortfalls in demand. Examples may be seen in the early winning over of high-achievers to vocationally-orientated programmes in Germany and Switzerland.
- integrating residual groups and combatting unemployment through new drives towards gaining qualifications. For example, modular programmes which can form part of a later qualification are a noted feature of education and training in Scotland.

44. It is very revealing to note how the worsening problems of national economies across the world - the effects of the push to rationalize and

modernize, of restructuring and upheaval in the labour market - collide with the specific educational traditions of various countries and nevertheless give rise to very similar kinds of solutions.

45. In all countries politicians have grown used to blaming signs of crisis in education mainly on the education system itself. This view is at once both correct and incorrect.

4) Who is to blame for the disintegration?

46. It is incorrect because completely different systems and solutions are being reproached in an identical manner. Some criticize the ossification of the dual system, others praise it for its stability and use the German system as a means to criticize the muddling through of their own education policy at home. Sometimes too much formal schooling and too little practice are seen as responsible for the failure to produce suitably highly-qualified workers; on other occasions it is asserted that quality can only be raised by passing on more knowledge in school. For example, it is not so easy to make a plausible case (as Edith Cresson has done) for the idea that in the final analysis the lack of a German-style dual system, that is to say of a fully-integrated vocational learning structure, is not responsible for the high level of youth unemployment in France, while in Germany itself more and more commentators are saying that an unjustified faith in the dual system's own dynamism leads to the illusion that the system guarantees a secure transition from school to work. The dual system itself has been responsible for a substantial share of present youth unemployment in the way it failed to connect the education and training market with the real job market in the minds of the trainees.

47. Many young people react to the risks associated with an early move to vocational training by remaining in general schools as long as possible and trying to gain the best possible exam results there. In doing so, it may well be that they "over-fill" training and education institutions in the tertiary sector and that many of them will come away empty-handed in the end, but their behaviour is not irrational in market terms, because the choice that they make to stay on in general school opens more doorways to them than an early decision to move into vocational training.

48. Blaming the education system is somewhat short-sighted, as it is merely a helpless victim of the labour market. At least the education system provides those in need with education and training. Higher education protects one against the risks associated with an early move to vocational training and promotes possible privileges with a late entry into training and career at the same time.

49. Nevertheless, the blame is in another sense being correctly attributed. The ways in which young people and the state react are both expressions of the structural disintegration of the education system. For all their superficial differences, the education systems of the advanced industrial countries are structurally very similar and ultimately anachronistic in their form, since they contain and maintain within themselves old hierarchies of professions, while at the same time student behaviour in choosing a career and the labour market bears less and less relation to those hierarchies. To sum up this phenomenon in a positive way, one might say that the anomalies in the school

system can only be combatted by integrated learning in the sense of an integration of general and vocational education.

50. Not one of the countries reported on has so far overcome the division between superior general education and inferior vocational education - a division that is deeply rooted in bourgeois market societies. It is neither the case that the two kinds of education and training are truly equal in value, nor that the occupational systems are truly porous. Even relatively open systems rely heavily on graduated assessments, examinations, tests and certificates. However many different routes the various systems have opened up to higher degrees and diplomas, however much they are now organized on meritocratic rather than on class lines, however successful they are in bringing the majority of a year group to the point of qualifying for higher education, the division between vocational and general education shows through in the end, and with it the division between work and education survives in teaching theory and practice. Anyone who really wants to change the situation cannot avoid the comprehensive demand for integrated learning. That is to say, it is not enough to rely solely on changes to the way careers are regulated, nor on integration by means of making them more fluid (by use of pathways), nor solely on changes in teaching.

5) The paradox of integration

51. A glance at Switzerland - at an extreme case, because what is described does not appear to have applied to Switzerland in the past - will clarify the general trend to connect the OECD-wide expansion in education with the programme of integrated learning. This example will serve to illustrate the paradox of integrated learning, namely that every extension of integration creates new forms of differentiation.

52. Until recently, Switzerland differed from all of the other countries discussed here in that only a small minority of school students qualified to attend a university. On average this was approximately 15% of each year group. There are cantons in Switzerland where fewer than 5% of students gain the right to university admission. As a result Switzerland has not yet suffered an educational "catastrophe". The Swiss have been more or less unaffected by the kind of expansion in education witnessed in France, or even the more modest version in Germany. The Abitur (called Matura in Switzerland) is still first and foremost an entitlement to academic study and therefore a form of preparation for careers which have to do with the sciences and the humanities, with research and scholarship. Anyone who does not take this path proceeds to a dual vocational training after the end of compulsory schooling (9 years). After these nine years he or she is deemed to hold appropriate qualifications to begin any form of vocational training and afterwards to take up any form of professional activity, apart from scholarship and research. If an individual's training is successful and he or she displays ability in the chosen career, there are real opportunities to rise in company hierarchy. After dual training in the banking business one really can rise to be managing director of Credit Suisse. As one might expect, Switzerland has a relatively low level of youth unemployment. The fit between training and occupational systems still seems to function relatively well. Young people select the educational track which offers them prospects, and they are sufficiently prepared by the system for the task ahead. In view of this fact, how far their learning is integrated is a secondary question.

53. Although things are to a great extent still in order, considerable efforts are being made in Switzerland to make vocational training attractive, or rather to keep it so, to ensure that trainees are in future guided on to further qualifications (the vocational Matura). The Swiss assume that in future around 20% of students will gain their Matura and that the aim of dual-qualified educational tracks (initially in technical fields, from 1994 in business and later in the design and caring professions) is to organize the remaining 5% through vocational education and training. One consequence of this development is that Switzerland will build a substructure for the universities in the future, a system of technical high schools for candidates with the vocational Matura. It is feared that without this measure there would be an erosion of the dual system, and in order to prevent this talented young people in vocational education have to be guaranteed their own path to university level. The logical consequences of this development are integrated learning in the curriculum and in the organization of education and training. Only if professional requirements are connected with the requirements of higher studies, if learning sites co-operate better than has been the case in the past will the kind of positive qualification arise that will justify dual entitlement. The canny Swiss are not drawing conclusions from a supposedly long-integrated system of training and offering highly-qualified candidates the right to study, but rather they are demanding first the proof that integrated learning has taken place. In future those with dual qualifications will be the new key performers, and the graduates of the technical high schools will form the new managerial class. The paradoxical conclusion is that integrated learning is the strategic answer to the threat of educational expansion in Switzerland, a threat which is in itself evidence of increasing integration in learning. Integrated learning creates new forms of differentiation. Integrated learning presupposes an element of disintegration and at the same time extends that disintegration.

54. A similar paradoxical conclusion may be found in the reports on the Netherlands, Denmark and Germany. Everywhere where vocational training is supposed to offer an alternative to high school and degree study for high-achievers, this demands a cutting-off of such educational pathways for those below. Everywhere where one aims to recruit young people who have already turned their backs on a lower-level vocational training, integrated learning becomes an involuntary means of creating a new professional elite. On the other hand, where integrated learning is pushed as a therapy for poor achievers and drop-outs, it simply scares off higher-achievers. Finally, where both policies are pursued at once, as for example is the case in Portugal or Denmark, a problematic jumble of motives and recipes is the result.

6) Substitute formulas for integration

55. While Switzerland prepares the way for dual-qualified educational tracks, and in the Netherlands vocational training is being planned as the equivalent of a university degree, in Germany, a country with a distinctly higher proportion of students gaining entitlement to study at university than in Switzerland and a distinctly smaller proportion than in France and Portugal, there is an increasingly desperate discussion about how to make dual education and training more attractive for the general school-leaver who has tended increasingly to try to take pathways leading to university entitlement and, as

a result, been lost to the dual system. The general formula in these cases has been that general and vocational education should be of equal value.

56. The German employers' federations have recently asserted that integrated learning in the revised form of dual vocational training is so rich in content in the way it is laid out that in principle every student completing a dual vocational scheme successfully is already in a position to cope with full-time study. The linking of the internal and external conditions has especially interesting implications for educational reform. Since nowadays the dual form of vocational training is in terms of its content anything but a mere practising of instrumental skills, it does not only cover imitating and rehearsing actions demonstrated, but instead presupposes to a high degree insights into the technologies being used, and since those in employment have to learn the same attitudes to work as those which are expected of students in training, it makes no sense at all to maintain a division between general and vocational education. Through integrated learning the two have become equal in value even if not equal in form. It is only a question of how one is to translate this into policy so that future generations will make the right choices.

57. Of course, despite the assertion that the problem of integrating vocational and general education has already been solved by their equal value, the real problem of integration still survives. Conceptual solutions are not factual ones. The German experience and the reports from Finland, Portugal and the USA, in which there is talk of implementing vocational branches within the general system, show persuasively how socially, politically and economically inconclusive and unconvincing such substitute formulas are in our universal competitive market society, particularly when one takes account of the extreme differences in the cultural and economic traditions and situations of the countries considered. Even if the alternative but equal-value route to a career is to be one through a profession, it remains in most people's eyes a "second-choice path" (see Cabrito). At least, this will obtain as long as the traditional path, that through "higher" education, continues to be regarded as a first choice, as long as it is seen to prepare the student with fewer complications and more securely for both study and profession.

58. The French report stresses the reservations of cultural and educational sociologists as to whether it is possible to found a strong alternative to the grammar schools in the shape of a system of gaining vocational qualifications (beyond the "Grandes Écoles"). Those reservations are characterized as:

- the strength of the hierarchical principle of paid work which is ensured through a differentiated system of diplomas;
- the continuing unbroken hegemony of the general higher education system;
- the reproduction through education as it now stands of the value system that the idea of integrated learning is supposed to weaken.

59. Anyone who thinks that these reservations are peculiar to the French situation is mistaken. The theory that a society reproduces itself through hegemonic control of education, an idea credited to Bourdieu, is true across the OECD, and all the more so because there has never been a truly integrated system. As recent history tells us, in Germany there have been repeated energetic attempts to arrive at such a system (cf. Kutscha). These have always

run up against the limits of the system of entitlement sooner or later. In the end, the only way to emancipate vocational content from the constraints of the surrounding society was the paradoxical step of separating theory and practice from education and training. Only by distancing vocational elements from immediate use-value, from the relationship to a practical training, has the German system succeeded in connecting vocational elements with entitlement to higher education and therefore career opportunities. The means to emancipate vocational education was always firstly the demand for integrated learning. The price for the recognition of new paths to higher education consisted in a certain distancing of the training from the profession itself, giving vocational education a "grammar school" flavour.

60. It is questionable whether this can turn out any differently in view of the widely recognized crisis in forms of vocational education that begin at an early age. The signs of crisis mean that integrated learning is associated less with a growth in reputation, status and qualifications (it is rarely the form of education sought after by the professional elite) and rather more with compensating for deficits in ability to fit into the workplace. Often it is said that anyone who is not up to scratch intellectually will perhaps make it through an integrated course, one that combines theory and practice.

61. In almost all countries integration is of no use to those privileged by the education system, for they derive their privileged status ultimately from disintegration. It is directed at the weaker members of society. Despite the fact that everyday experience teaches us that surprising successes are attained in all kinds of learning when we combine sensory contemplation and practical challenges and are offered appropriate support, the structure of disintegrative school-based education continues to be upheld. This does not stop integrated learning coming into play as a lubricant whenever the traditional machinery breaks down.

7) Conceptual variations towards the subject

62. Just how deeply the division of education and occupation has marked patterns of cultural interpretation, at least as far as the European mainland is concerned, and not only in countries like Germany, where education and occupation have formed an irresolvable contradiction for two hundred years or more, is revealed by the linguistic difficulty of formulating a concrete image of integration in learning, let alone of seeing it put into practice in teaching (see above all 2.2 below). In this it is not a question of deciding what elements are to be brought together - a consensus on what to include can be arrived at quite easily - but of how one is to set about putting integration into practice, and what changes of the subject arise through integration. The following are some examples:

- Is integration to mean that the things that are to be integrated dissolve one into the other and form a third, new entity? But what would be the product of the fusion of theory and practice along such lines? A technology without theory or practice? What would be the product of integrating the demands that subjects place on students and the tasks demanded by praxis? Would this mean a series of projects? If so, what would happen to systematic knowledge and the systematic development of skills? What would be the product of integrating learning and work? A form of simulation? That would

indeed be a third entity between the two, but not the third item that would replace the other two aspects. It should be added to learning and work but it cannot replace them.

- Or is integration more like a chemical reaction in which individual elements of the things that have been brought together are retained but now form a new molecular unit? What would a molecular theory of integrated teaching and learning look like? Does this direct us towards the Scottish modules towards vocational qualification? Hardly, since these do not connect aims of educational pathways but divide their programmes into common or rather general building blocks. Knowledge and skills are to be brought together, but how, if not in a natural way - in areas where both always appeared together naturally and fitted together in terms of the demands they made anyway. What works in chemistry does not offer us any guidelines for an integrating theory and practice of teaching and learning. The idea of a chemical reaction remains a metaphor for something that has not yet arisen. As ever, concepts without a particular reference point remain empty abstractions!
- The German debate places its hopes on the power of paraphrasing. One speaks in Germany of dovetailing, often without detailing where and how this is to occur. The terms attaching and connecting are used in a similar fashion. But even these metaphors are too mechanical and unspecific, and they are of little use to a teacher trying to decide how to organize integrated learning towards whatever goals. (Has one already "dovetailed" two subjects if they are "attached" to each other within the curriculum? Or can one only consider them "connected" if they work through common complexes of questions, and problems?)
- Only the Hegelian idea of integration as the preservation of opposites within a synthesis has helped the writer of this report in the context of his own projects. "Preservation" means that the opposition is as it were "trumped", but the two opposites are retained in practice and within the term itself. Therefore, integration does not only extinguish the opposition between theoretical knowledge and vocational praxis, between autonomy gained through education and dependence enforced through work, it represents the task of working away slavishly at them with the aim of overcoming. While young people are shown through education the hypothetical potential for gaining autonomy in the subjects that they are learning and are shown how this is curtailed in practice, integration arises in the form of illumination of the connections between opposites. Looked at in this way, integration would demand that professional practice be acquired according to scientific principles. However, this should not be taken as a reason to negate the existing functional context of professional practice. The principle of criticizing practice by using theory confronts the demands of practice and the demand placed upon practice with the reality of practice itself. Professional competence is not prevented from developing by this, rather it is acquired in full knowledge of its limitations.

63. This philosophical digression into the foundations of the problem of integration is intended to make clear how problems of definition affect any basic outline for integrated learning. In summary, these problems mean that integration is not a qualitative alternative to differentiation, but that it may describe a movement to relate things to each other which may in fact only be separate in appearance, a movement therefore to recognize the hidden connections between things. Further paradoxical consequences for training and work follow from this observation. In order to be able to integrate learning and action the learning sites must be strictly separated in terms of the tasks they are designed to perform. In order to achieve optimal results in a firm tasks at work should perhaps be strongly differentiated one from the other, for it is only then that they form an effective unit. Very high achievements are expected from lower status vocational training which it is hardly able to provide. At the same time it can be empirically established that integrated learning, like any other form of learning, always functions best when it takes place in reference to a goal. Like all learning integrated learning is in essence about the integration of new competences into existing ones.

64. In the light of the conceptual difficulties, it is very tempting to pick up the range of distinctions that have been passed down to us, to pick up everything which causes and has made possible disintegration in the school system. According to such definitions would-be students should take preparatory courses in academic methods and would-be skilled workers should be learning instrumental skills and working. Theoretically-oriented learning should take place in school and action in practice, perhaps here and there model-based testing would take place in workshops. But as a rule these would produce nothing in earnest and therefore hardly anything can ever go seriously wrong in them. If one calls for integrated learning, then one is demanding that what is separate should somehow be brought together. Where might one find a model for this?

8) Integrated at work, disintegrated in training?

65. Our reading of the national reports emphasized that by setting up the aim of integrated learning all OECD countries are in fact asserting a structural deficit in all forms of traditional vocational education and also a similar failing in non-vocational education at the higher level in secondary schools. And this remains true to a large extent independently of how differing national education systems are organized. These systems are said to be disintegrative or rather not integrative enough. This is somewhat surprising in relation to vocational education in the stricter sense for the following two reasons:

- Firstly, a unifying idea can be of great benefit in preparing students for an occupation. Vocational education concerns itself with a differentiated unity of aspects when it deals with the demands that will be objectified for the student in the future by the profession he or she enters and the job he or she does. Without a clear description of what someone has to do in a particular occupation then that occupation would not exist. Jobs do have different fields of work, different responsibilities, different levels at which problems are addressed, but practice in work is not differentiated into separate elements along the lines of school subjects. In work there are phases of reflection and of action, but

no artificial separation of learning and working, no syllabus and so forth. Vocational training which oriented itself thematically and methodically along the lines of occupational work would be per se integrated learning.

However, there is a visible break between work in a job and the ways in which one can learn to work in that job. Cultural anthropologists cite the old apprenticeship served to become a master of a trade as a unity of action and teaching. It is said of the complex modern work structures that vanish into the black box of process engineering that they can no longer be passed on through teaching while at work. The disintegrated theory of teaching and learning, which analytically processes the hidden totality of praxis into disciplines and corresponding methods, would therefore seem to reflect a disintegrated world of work. The key to its integration would seem then to lie only in theoretical description and no longer in practice. When one contrasts this image with the image of the post-Taylorist work process, it is apparent that for many new jobs precisely the opposite would seem to hold true: complex responsibilities for production and service processes revolve around teamwork and as such demand a new set of all-round competencies.

- Secondly, most of the vocational education tracks, which are directed towards a concrete activity carried out within them, fulfil the social function of integrated learning with the objectivity of a newly-appointed task. Learners are expected to bring with them as good a foundation of basic knowledge as possible. Equally, it is essentially assumed that the vocational task will represent new territory for the learner. Vocational training offers a second chance to all those who have had increasing problems with the usual forms of school-based learning. For example, processes involving mathematical comprehension are much better learned in the medium of a problem relevant to work than from a school blackboard. In vocational training it matters less what the student brings with him or her in terms of preparation and more what he or she is able to achieve in dealing with the demands that are made. The work process performs the job of social integration and only later, when it is complete, does it offer functional differentiation. The kind of differentiation that goes on in schools offers no certain prognosis of success in the occupational field. In addition, this differentiation is achieved at the expense of the isolation of the individual student. In many ways therefore such differentiation is dysfunctional when related to the new working environment.

66. One curious point about both of these reasons should be borne in mind, and that is how little the totality of occupational experience and the integrative function and effect of work have been used as learning models in structuring integrated learning pathways. Every successful self-taught worker has something to tell us about integrated learning strategies. Instead, many strenuously constructed illustrations of "real practice" undershoot the level of background experience brought by learners to the task. Many syllabuses are constructed as if one had first to spend many months studying the foundations of a subject systematically before being able to follow its applications meaningfully. Trainees who are challenged to solve problems in practice and

succeed in doing so will rightly increasingly doubt the preparatory function of school-based learning.

67. The German dual training system displays the resulting contradictions particularly clearly. In principle there is no barrier to entry from school, only the fulfilment of an apprenticeship contract after general compulsory school and the skills acquired during training. The openness of the system is in fact limited by the market behaviour of the firms taking on trainees. And in this respect it is not abilities which follow from the vocational qualification which are rewarded but actual achievements. For many years in Germany an average pass at the end of the first stage of secondary school allowed a student to proceed to an apprenticeship in a major bank. Pressure of applicants from the arrival of children born at the height of the baby boom of the early 1960s at the age of maturity caused this average standard to rise so that the Abitur became the normal passport to an apprenticeship scheme. Now the majority of Abitur-holders are leaving the banks because they do not find the job satisfaction promised to them as school-leavers. In effect, they are turning their training period at the bank into an intermediate stop on the path to further study. The banks as a result are orienting their recruitment towards secondary school-leavers with more modest qualifications and are emphasizing to this group that vocational qualifications and not their school exam results will count in their career. This example, one among many, shows how vocational training can be seriously affected by demographic and economic circumstances and by labour market policies, and how the potential for integration of such training can be undermined.

9) Integrated learning as a remedy and the developmental paradox of the school system

68. Education policy-makers are seeking a system which will minimize the effects of these dependencies and deformations. Many people say that the German dual system is such an instrument. Anyone who has observed this system over the last three decades knows that it has had more than its share of problems. During the great reforming period (1966-1974) there were, for example, powerful forces which sought to protect young people from the "arbitrariness" of being trained purely for economic interests and demanded a separation of vocational education from its links to firms conducting training. At present, important professional fields covered by the dual system are seriously threatened because there are no longer enough well-qualified young people who want to take up an apprenticeship place. In East Germany on the other hand the present crisis consists of a lack of firms providing apprenticeship places for trainees who wish to take them up. From time to time there is some nostalgia in the East for the good fit between vocational training and the labour market that existed under the GDR regime. This is seen as the reward for a thoroughly integrative organization of learning, in which students proceeded from the "polytechnic" secondary school [polytechnische Oberstufe] to the "nationally-owned" vocational school [volkseigene Betriebsberufsschule] and the generally available combination of vocational training with an Abitur. Now firms would neither be able to offer training to all those who wanted it, nor would that training lead with any degree of certainty to a job...

69. One is tempted, in view of the negative role economic and demographic factors play in relativizing the potential of integrated learning to integrate training and work, to regard the various training models as interchangeable.

70. It has already been noted that one of the more home-made problems lies in the changes in participation and behaviour in choosing educational pathways caused by the school structures themselves. For in education systems where the first stage of the secondary school system has become completely comprehensive, or where the educational track that leads to further study has effectively become a comprehensive track (I have in mind the French aim of having 80% of a year-group gaining the baccalauréat), there are justified complaints about the increasing disintegration of learning and work that are the inevitable drawbacks of such a development.

71. Integrated learning is more frequently declared to be the solution where the expansion in education has come about by using the means at the disposal of the hierarchical system characterized by the separation of superior education and inferior vocational education. Inasmuch as this has been the case, the contradictions of the training system have only been accentuated. Unease about this situation is provoked by the fact that the only medicine that occurs to many is the virus which is supposed to have brought on the illness in the first place, namely integrated learning. On the one hand, conservatives in the OECD countries suspect that the hierarchically-structured school and training system with its beacons of excellence in the high-school, Gymnasium or lycée has lost its function in the present conditions. Even in Germany the Gymnasium has become the main secondary school, despite the fact that it is only designed to reproduce a small elite of 15% and finds its main function in disassociating itself from the lower schools. However, instead of now betting on a thoroughly integrative system, conservatives are nostalgically conjuring up the functioning of the old system as if it were now a matter of preventing a final breach in the dyke. By emphasizing the value of higher education however, one of necessity puts down vocational education. In this way the tidal flow towards higher education goes unchecked. As an emergency measure conservatives then demand policy intervention from the state to set up selection and differentiation procedures. Any government that acted on such a policy would be threatened by an enormous loss of public faith. Having access to education is after all part of social status! Therefore, the expansion in education will continue amid radically deteriorating provisions, while vocational education will be commended to limit the damage being done. All in all these are not favourable conditions for integrated learning. The repeated criticism that vocational curricula are oriented towards the "superior" academic secondary education with its promises of privilege and status will remain without force.

72. The symptoms (the growing overly-academic discourse, the shortfall in skilled workers, graduate unemployment, residual groups of the under-qualified and effectively unemployable) are as a rule not experienced as the effects of a structurally disintegrated learning system. As a consequence it is hard for people to see how an integrated learning system might correct these developments. American scepticism towards high-school reforms that introduce vocational courses instead of comprehensively raising the level of key general skills has already been mentioned. Reservations towards education and training institutions that are continually taking on board new integrative measures are now more widespread than in the USA alone. Figures from the worlds of business and politics are turning increasingly to the old radical school critics. In

many places one can hear references to an "educational mania" and to the backwardness of schools in civilizing their students. Schools take too long, according to their critics, they are ineffectual and simply deal with too many problems. Conservative critics suspect that in former times, when learning was disintegrated according to level of achievement, the schools were still in a healthy state. Now they have been burdened with too many tasks. Plans for reform ought therefore to involve more differentiation rather than more integration. In Germany, one of the central achievements of the dual system, its uniformity, is questioned using this kind of thinking. A training split into stages is then called for. From this better students would move on to a form of training with a high degree of integrated learning; the weaker ones would then have to get along largely without the benefits of this form of learning.

73. There is a pattern of perception and problem-solving that shows through in the observations made above which explicitly raises objections to schemes for integration. The advocates of the integrated approach sometimes rely so heavily on the suggestive power of their formula that they are easily misled when it comes to the level of support the idea enjoys outside the secure environment of their own field. In all OECD countries there are powerful social forces ever-prepared to combat integrative measures whenever these threaten their material interests.

74. Among representatives of the business community there are growing calls for differentiation and with them for integrated learning without a socially integrative background. This is reflected in many of the national reports (for example, in the case of the Netherlands) in the form of defensive justifications of the concept. In order to ensure that an integration model is accepted, the necessity of differentiating it at particular levels is stressed - a kind of integration in small doses. The extent to which giving in on this point brings forth new contradictions has already been clarified by the digression on the Swiss situation.

10) *Sceptical prognoses above all for problem groups*

75. Many integrated learning measures are given a negative or at least sceptical prognosis in the national reports. Integrated learning is supposed to be something which happens as a natural unity or at least as a connection between apprenticeship and school, of practical training and theoretical instruction, but there is no consensus as to whether it can be effective above all in problem situations:

- Integrated learning is targeted rightly at particularly weak students, but whether these are better able to compete later on remains a moot point.
- By passing on partial qualifications that are effective in the job market in modular form (below the level of full professional competence), integrated learning is supposed to open up opportunities for the more poorly qualified drop-outs from the system, but whether these same drop-outs accept the lower-qualified work and poorer pay made available to them in the medium term is something which has been questioned repeatedly.

- Integrated learning is aimed at the group of highly-qualified graduates who fail to gain positions commensurate with their level of education, or at former trainees who do not find work after finishing their first vocational qualification. Through integrated learning they are supposed to get a second chance to gain qualifications relevant to the job market. Only slightly better prognoses are made for this group.

76. The writers of the national reports that have been presented are consistently sceptical about the possibility of integrated learning functioning as a form of compensation, even though all of them describe the fascination that the formula exerts, and all of them are convinced in principle that integrated learning is the only solution. The Swiss report writer tells us defiantly that the Swiss are committed to realizing a set of aims that according to other countries cannot possibly be successful. It is noteworthy that even very different historical and cultural starting points, for example Finland contrasted with Portugal, do not lead to any other conclusion: *Where integrated learning is aimed primarily at the negative consequences or side-effects of an expansion of the education system that is not accompanied by a thorough integration of the training system, then integrated learning merely stabilizes the system that is partly responsible for the problems in the first place. Integrated learning is of no use as a remedy if the existing learning was unsuccessful.*

77. Only integrated learning as a programme for teaching and learning methods in initial vocational training remains untouched by scepticism, since it is only through integration that learning can be made relevant to practice.

78. How can the same remedy help both the better and the best students, and the weaker students and those who fail? Talking about integrated learning as a "passe-partout" can easily generate a negative image and place a stigma upon it which unintentionally increases the attractiveness of traditional learning. Traditional learning then appears as something difficult, selective, complex and in keeping with the dominant culture (particularly in France and in Germany). Integrated learning in contrast is the easier, less complex and more practice-oriented path which especially those who find the theoretical path too difficult must pursue.

79. Integrating theory and practice is supposed to be the task of integrated learning, but the schemes for doing so are often so fixed in their educational policy and teaching methods that the dominance of theory over practice is unintentionally confirmed in stronger students and practice is placed before theory for the weaker ones.

80. Anyone who wishes to use integrated learning to influence the educational decisions of young people and their parents in favour of an earlier concentration on vocational activities, but at the same time wishes to leave the hegemony of upper grammar school education untouched, will not succeed. This much is agreed by the diagnoses from Finland, France, Portugal, Germany, the USA and the Netherlands.

81. However incisive a study on the "illusion of an equality of opportunity" might be, whether the American variant from C. Jencks or the French version from Bourdieu-Passeron, it would not really discourage those who want create "

equality of opportunity in secondary schools by means of integrated learning. The limits of scepticism are defined by the lack of alternatives to the demand for integration and by the plain fact that disintegrated structures are politically untenable in an education system appropriate to a democratic society.

82. In the higher stages of vocational education, in contrast to general education, direct positive effects with regard to equality of opportunity and to integration into work and career are no longer quite as emphatically anticipated from integrated learning. Too many young people come into vocational education with the traces of disintegration still apparent. The reports come to a definite conclusion that the best pedagogical intentions, even the effect of their success, ultimately depend on demand in the occupational system:

- It is not measures to fit poor learners by means of qualifications passed on by integrated learning which ultimately decide whether such learners find a job, but the attractiveness of such people in the job market as a whole; in other words, what counts is whether they can be used as employees at all.
- It is not how well-qualified skilled workers are made by integration in their curriculum which decides whether they will be used when a position is available, but principally whether there is a real demand for employees to be used at that point.
- Measures to retrain already highly-qualified workers lose much of their effectiveness because of the sceptical attitude of firms recruiting a skilled labour force towards late entrants.
- Those who have up till now benefited from the disintegrated structure and owe to it their status and position in society inevitably attempt to reproduce those benefits for their literal and intellectual offspring. Such attempts oppose the clear realization of the effects of integration.

83. These restrictions should not be taken to mean that the lesson of all the national reports is that integrated learning does not stand a chance. We can only be certain that without integrated learning many young people would be still worse off than they are. Even the highly sceptical report from France and the Finnish censuring of changes in the basic operating conditions of training and education systems do not warn us against integrated learning. They do, however, point to the need to analyse the pre-conditions, implications and effects that affect the prospects of success when using this approach. The question arises at this point as to whether it is in principle a sensible reforming strategy to recommend and propagate the same recipe in the same way for various tasks and problem complexes?

84. The author of this report sympathizes with these extrapolations but at the same time considers their prognostic value to be rather suspect. The analyses are perhaps too wedded to the old fundamental European model of the relationship between education and training. Perhaps the advanced industrial countries will just have to get used to the idea in the future that the formerly almost linear relationship between entitlement and occupation has been

irreparably destroyed, even bearing in mind the terribly high base rate of unemployment in the OECD countries. For example the harsh criticism of the Balladur government's initiative to guarantee young people a minimum wage and that government's disillusionment following protests indicates the painful realization that diplomas and certificates are only worth what one can get for them in the labour market or social market. Soon, it may well be that the "flexibility" of the majority could count as their chief characteristic. This would consist of applying for a great variety of jobs with a general and a vocational qualification. The task of educational institutions at the upper level might in future above all lie in removing any inhibitions towards modernization that students might have. Indeed, vocational education and training in some fields will perhaps consist in preparing young people for the fact that their training is an entry into a further educating and socializing process.

11) Integrated learning beyond "integrated learning"

85. The way in which the extrapolations of the report writers refer to speculations reminds us again of one of the strange features of the debate on integrated learning - that the perception of present deficits is projected onto the anticipated potential of the alternative (integrated learning) to solve the problem. To a large extent, the positive or negative effects of young people's learning as it stands, pre-structured by institutions and curricula, are asserted without being substantiated. From such assertions deductions are then made as to the possible corrective effects of educational organization. Ultimately, such ideas are based on a basic presumption that education in Durkheim's sense of a methodically organized process of socialization dominates over an indirect, as it were organically evolving socialization of people in their social environment. In other words, vocational education and upbringing have to be applied against the stubbornness of the subjects and their life and work circumstances. In truth the cause-and-effect relationship of conscious education and the hidden curriculum of everyday life are anything but well understood.

86. Rational discussion of the possible conditions of integrated learning is made more difficult by the near absence of empirical findings on the effect of real learning when evaluated as integrative or disintegrative. Everyone has personal experiences, often ones which fit in with his or her prejudices, hopes and fears. It is obvious enough that disintegration produces deficits and obstacles to learning. But this does not explain:

- how real learning can take place under disintegrative conditions,
- or how successful integrated learning can be under conditions considered to be effective.

87. In the national reports there are almost no indications as to how one could reliably judge the negative effects of disintegration or the positive effects of integration. Instead, when it comes to many more recent projects, these are said not to be advanced enough in order for one to arrive at conclusive results (for example, in the Netherlands). The sceptical remarks on the possible effects refer throughout to the educational-sociological effects of reforming strategies, above all to their effects on the labour market and their consequences for the behaviour of students when choosing educational pathways - in other words to parameters which are relatively easy to define and

to observe (participation in education, behaviour in transition from one area to another, etc.). The reports largely avoid the question of what advantages in terms of qualifications young people really gain through integrated learning. Instead there is much talk of intentions as if these were already effects.

88. In a sense, the way in which the category "integrated learning" is more aligned towards reforming intentions and too little concerned with the real conditions that obtain in the learning processes of students is taking its revenge here. If one begins by distancing oneself from the goals of reform and introduces the distinction between programme/intention and effect then it becomes necessary to define the category of integrated learning differently, namely as the *performance of the subject* on the basis of socially required and as it were staged developmental tasks. Only in this tension of subjective expectations and abilities and objective demands are opportunities for an integrated teaching and learning method realizable.

89. In order to get to the bottom of this it is not wise to refer back to the constructs of educational theory all too quickly. Instead, it might be worth noting that integrated learning does take place anyway and how it does so. Mainly it is a matter of the "social fact" that in the great majority of cases the inter-generational task is solved well enough to allow young people to take over the occupational roles of the previous generation competently and that these roles also satisfy the new generation's innovative surplus. Perhaps one might make the heretical observation that society would not reproduce itself adequately, nor would the following generation integrate itself into society and work, if the education and training system really did cause such enormous social and occupational disintegration. There is no question of this of course. Even in the USA, where there is hardly a complaint that has not been hurled at the education system, no-one thinks that the education and training system is preventing the regeneration of functional elites, or that there are no longer any suitable applicants for the jobs on offer. The deficits are being dramatically over-estimated. They affect the system's losers far more than those who are able to prepare for their work and career successfully, albeit under more difficult conditions. The economic crisis is casting its shadows on the education system. It is no longer receiving the financial support that it should receive, given its expansion, and at the same time the qualifications that could once be produced by the education system are less and less in demand in the marketplace.

90. The problem lies less in the readiness and ability to learn of individual subjects and is rather more bound to the (un)reasonableness of social institutions, in particular of the economy. One can say of most unemployed people that they would like to be integrated into work, if only they were permitted to work. It is tantamount to covering up the facts if one says there are not enough suitably qualified people available given the higher demands made on workers, and that the young person is therefore responsible for the fact that he or she is unemployed because he or she has not worked hard enough in his or her training. It is precisely here that a comparison of the various education and training systems reveals many of the well-cultivated subjective explanations of the crisis for the misjudgments that they are. Anyone who began an apprenticeship to become a skilled worker in Germany thirty years ago could get a training place, even if he or she had left school early after eight years. Today a similar young person would count as under-qualified.

even with two further years of school completed and be prescribed integrated learning as a therapy.

91. The demands for better paid and better organized work to be available could also be met to a much greater extent than happens in many countries - as comparative labour market and occupational research proves. It is astonishing that the readiness of young adults to integrate into society remains so strong, given the extremely high level of youth unemployment in some OECD countries. If one takes seriously the assertion increasingly made by researchers on training and representatives of business that the new working environment will demand a much higher level of qualifications, that, alongside solid specialist knowledge and skills, qualities like flexibility, the ability to work in teams and independence will be important, then one may note by considering the work done in companies that the stimulative nature of work and subjective abilities have remained effective enough overall to ensure that, for example, computer systems are used sensibly, new products are developed and implemented, and that this occurs under conditions that may be termed disintegrative.

92. I ask the reader not to misunderstand this hymn of praise to praxis. I do not mean that there is not a clear need for improvement, nor that the shrewdness learned through work and the "school of life" can compensate for deficiencies in training and education. I remind the reader that there is a real integrated learning beyond "integrated learning" and that this reality should inform our teaching and learning methods.

12) Intermediate conclusion: areas of reform and possible consensus

93. Looking at the conditions of integrationally effective learning processes should not tempt us to close our eyes to what can be reformed and ought to be reformed. The fact that integration does occur time and again in real learning does not mean that it is sufficiently effective and proceeds satisfactorily in terms of its content. We have seen that the success of what has been integrated produces ambivalences. Even integrated training structures can brand too many students as failures. Many are not able to develop the abilities they have in the new learning circumstances. The success of many others should not make us forget this. Then for an educational theorist there is always the question as to whether integration is not bought at the price of too great a readiness to adapt to structures that should themselves be criticized. Learning is only truly integrated if it is able to pass on identification with a certain critical distance.

94. Therefore it is important to repeat as far as the pedagogical part of this chapter is concerned the points on which there is a possibility of finding some consensus for further supporting integrated learning across the OECD.

- 1) In all countries there are approaches to reform, not in the sense of an earlier start for vocational education, but in the sense of a critical confrontation of all secondary school students with work and career as an important element in general education. This aim is supported by businesses and unions alike.
- 2) One may also speak of a uniform developmental strategy in the addition of advanced schemes for vocational education to the tertiary sector. These are taking shape in Switzerland in the form of

technical colleges that are close to occupational practice, and in Germany in the form of new vocational profiles that are often at odds with the traditional subject boundaries.

- 3) Integrated learning programmes are aimed above all at reforming vocational education and training in terms of their educational theory. They aim towards new (key) qualifications. In this way, vocational education and training is to be modernized and from it new apprenticeship and work forms are derived. In this, the emphasis is on competency-based learning.

2.2. Integrated learning as a magic formula. On the teaching and learning dimensions of integrated learning - a second approach to aims and motives

95. Even if aspects of the theory of teaching and learning were mentioned repeatedly, integrated learning has up till now been considered at a distance from concrete events. The analyses of discourses, concepts, national peculiarities in education systems and structural reforms may have made the reader impatient to find out what exactly he or she is supposed to think of when the term integrated learning is used. This section will describe the pedagogical semantics of the concept.

96. Those with ambitions in the field of teaching and learning theories are born champions of all forms of integration. This phenomenon accompanied the emancipation of the bourgeoisie and the lack of satisfaction that most educational theorists have felt with regard to their results up until now. With the demand for integration educational theorists are combatting the consequences of the successful institutionalization of education at all levels and the nationalization of the fully developed school system. In other words, they are fighting back developments that they themselves set in train, beginning with the rigid timing of lessons through to the differentiation of subjects from each other, the differentiation of schools and school careers and the separation of life or rather work from going to school. Paradoxically, integrated learning is supposed to join together again what mass education had to separate in order to become socially successful.

97. Professional educationalists support the programme of integrated learning in vocational education and training because of the positive options that the formula opens up. Since vocational educators have closer contacts with real life, the concept permits an extension of their own educational claims into areas previously distant from work and career. Anyone who promises to "produce" competencies which others need is in demand. As we have shown integration is the ideal way to attempt to emancipate vocational education and make it equal in value to general education. Without repeated efforts to mediate between theory and practice vocational education would soon run into a crisis of confidence, no matter what educational organization it proceeded from. A separate education aimed at occupational needs may only be set up where theory is helpful and necessary in acquiring the ability to take actions and praxis as work must be supplemented by praxis as learning. Instructors must be able to show that targeted and specific learning about work produces better results than learning at work.

98. General experience teaches educationalists in all sorts of educational institutions that only deficient proof of these assertions can be produced. In many fields learning is unsuccessful because it remains disintegrated, and it is this disintegration that all attempts at reform centre on. It appears as a kind of chronic, negative normal situation for learning and development. Indeed, it might even be asserted that our understanding of integrated learning derives more from the evidence of the effects of disintegration than anything else. The two concepts are different sides of the same coin. They are complementary in such a way that the positive effect of one of them (integration) almost seems to follow from the cancelling out of the other (disintegration). Integration in learning always takes place whenever aspects of an intellectually constructed whole do not fall apart, whenever elements of different disciplines do not stand alongside each other without any relation one to the other, whenever stages of learning and groups of learners are not artificially separated, whenever the learning sites do not make opposing or even contradictory demands upon the learner. Good learning is therefore learning which fits together as a whole, which is comprehensive and socially unifying.

99. These guiding principles may be found as early as the work of the founders of the European educational tradition, for example in the writings of the theorist Comenius, who wrote "to all, everything, in all directions" ("omnes, omnia, omnium") in the 17th century. Comenius drew up his model of integration in keeping with his pansophic view of the world and the message of salvation that followed from it. The theorists of the European Enlightenment concerned themselves with the problem a century later in a much more modest fashion. They wished to promote integration through a planned manufacturing of bourgeois attitudes, in particular of a taste for hard work and sound business sense. The new key to integrating learning was so concentrated on occupation and usefulness that the backlash was bound to come in the transition to the 19th century. In Germany the new humanists turned against the sacrifice of individual talents to the interests of the market and demanded that education be divided into a general human education followed by a specific vocational training. From that point onwards the lines were drawn up between work and learning, occupation and education. These distinctions became decisive in the development of schools in most European countries from the middle of the 19th century. It was only after the victory of large-scale industry and the critiques of industry and civilization at the turn of the 20th century that theorists were able to attack the polarization with any success. The movement for reform directed its critical attention towards the petrified forms of word-based learning and learning by rote then typical of schools and postulated reforms that would involve creating all-round learning conditions. Learning and life were to be connected, learning by doing was preferred wherever possible, subject disciplines were to be broken up and so on.

100. Impulses also came from vocational education. In Germany G. Kerschsteiner founded the vocational school on the basis of dual sites of learning, after he had successfully preached that vocational training was the door to becoming truly human, citing Goethe himself in support of his aims. From then on the criticisms of normal schools are notorious, and the demands for integration repeated frequently. The following list of sins was compiled.

1) A catalogue with reference to the ideal of integration and forces working towards differentiation

101. Beginning at the level of teaching, disintegration takes place in the following situations:

- a) if the teacher teaches different subjects from those the student is willing and in a position to learn and in different ways;
- b) if the various subjects in the curriculum do not refer to each other, if they are taught in a disconnected and isolated fashion;
- c) if the curriculum does not form an intelligible whole, and if it suppresses important aspects of a subject;
- d) if the demands of the firm are structured in a completely different way from those of the school;
- e) if theoretical approaches are applied directly to practice;
- f) if the different dimensions of the competence and qualification that the student is working towards are not connected with each other, resulting in dissonance;
- g) if the stages of education and training do not build one upon the other chronologically;
- h) if working and educating oneself cannot be referred to each other, because the practical experience is not integrated into the young person's educational process;
- i) if students are isolated by the organization of the learning processes and encouraged to learn in competition with one another, with the result that social learning is not integrated into the learning of the subject;
- j) if the structure of disintegrated educational tracks forces the segregation of student groups, producing, for example, residual groups with little prospect of employment or who can only be integrated with difficulty;
- k) if diplomas and qualifications in the education system do not correspond to the demands of the occupational system, or to put it in more concrete terms, the school curriculum does not match the profile of needs that firms have and so on.

102. The pedagogical aim of integrated learning rebounds in many ways on the functional imperatives of the training and education system. In educational-sociological terms, this system serves to prepare students in all OECD countries for selection (fitting them into the hierarchical division of labour). Through it they will undergo the appropriately differently formed process of qualification. In the end, the system serves to internalize the legitimate order that is also to be expressed in the education system.

103. *The normative surplus teaching and learning theory, which is directed towards integration, necessarily rebounds on the functions which the education system is supposed to fulfil. The opposition between norm and function is realized in different ways in all countries. This means that the education system can be both oriented more closely to fulfilling the norm as well as more closely to realizing the function understood in a restrictive fashion.*

104. *As a result it is obvious why educational policy-makers must use the integration formula suggestively and emphatically against a rigid functionalizing of the education system. It also becomes clear that integration can only be understood meaningfully as the dismantling of politically no longer desirable or defensible superfluous disintegration which particularly inhibits learning.*

105. *We could show the truth of this in the thought experiment of an education system in which integration had been fully realized. In such a system the following would obtain:*

- a) *If the teacher only taught what students were willing to learn then the compulsory curriculum that unites all students in training would be abolished. No state will want or be able to do this.*
- b) *If the teacher is to teach in exactly the same way as the students learn then mass schooling should be transformed into a consistently individualized form of instruction. Even the basic financial prerequisites of such a system are absent.*
- c) *If the various subjects in the curriculum all referred to each other, a form of total teaching defined by a series of projects would arise. As a result, however, socialization within a discipline and preparatory academic studies with systematic instruction would become impossible. The break with our own culture, marked as it is by individual academic disciplines, would be too radical. Teachers would lose the capacity that secures their role in the school system - that is, the responsibility for a subject within an organized system of academic disciplines.*
- d) *If the aim of realizing an intelligible whole in all educational pathways were taught in the form of an encyclopedic variety of material, then this would rapidly exceed the framework of any training and education institution because of the complexity of knowledge that could be included. Realizing an intelligible whole can always only mean emphasizing the material that is relevant in view of each respective educational task but which would not be considered in a more specialized framework.*
- e) *If the demands of the firm and of the school were identically determined and interpreted then the question would arise as to why any form of alternance - alternation of work and school - should be necessary at all. On the other hand, one would still have to insist on the difference between education and qualification, on the tension between instrumental action and reflexion at a distance.*

- f) If theoretical approaches were fully in harmony with practice then the difference between practice and theory would be suspended. One would have been subsumed to the other, and theory would lose its criticizing function and practice its function of correcting theory.
- g) If the different dimensions of the competence and the qualification the student is working towards were seamlessly and evenly connected with each other, then an undifferentiated average and a normalized standard competence would emerge. The specializations which are so necessary to the development of innovative and highly developed competences would no longer be the aim of the process but be likely to be seen as obstacles in the learning process.
- h) If students were urged to learn socially through the organization of the learning process, then weaker students really would be socially integrated. This would lead to a domination of social qualification aims over others, and therefore to the abolition of the function of selection within the education and training system. In societies oriented towards individualization this development would be resisted as a social or socialist form of coercion. The utopian nature of such a demand would be apparent in an education system that excluded the possibility of structurally segregating student groups and therefore did not produce any residual groups. In reality, integration typically refers to another perspective - that of reintegrating the disintegrated.
- i) If the diplomas and qualifications offered by the education system referred exclusively or primarily to the needs of the occupational system, then this system would have to be controlled by a planned economy which would contradict the principles of liberal market democracy. In addition, this would presuppose that the needs of the occupational system could be clearly predicted in the medium term, something which is simply impossible in a market economy.

Only one point in the negative catalogue or list of sins above cannot be developed ad absurdum by formulating it in a consistently positive manner. A consistent reformulation of education towards integrated learning remains meaningful:

- j) If the stages of education and training build one upon the other chronologically so that working and educating oneself refer to each other, so that practical experience is absorbed consciously and seriously into the young person's educational process, then integrated learning succeeds. In chapter 4 we shall examine just how few examples of this appear in the national reports.

106. The truth for integrated learning does not lie mid-way between the rejected reformulations of the concept in a position between full integration and real disintegration, what one might ironically refer to as a kind of "half-integrated learning". In interpreting the extent of integrated learning it is

more a matter of lessening the negative effects of disintegrated learning. In other words, to put it more concretely, it is a matter of:

- lessening disintegration that results from educational theories and methods themselves;
- diminishing the dependence of the training and education system on the changing demands of the occupational system in order to prevent possible disintegration.

One of these points refers more to the micro-level of teaching and learning, the other more to the macro-level of access to study and career opportunities.

2) A catalogue from the point of view of those affected

107. Before citing some examples from the national reports I will look at integrated learning once more, only this time from the point of view of the subjects of teaching and learning, in order to show how varied the dimensions of the problem and the task are, and in order to ask in a meaningful way where supportive measures should be introduced.

108. Integrated learning refers to tasks, dimensions which the young person must somehow accomplish in practice and does in fact. In order for training and work to function effectively subjects must learn to master the abilities that are demanded from them at work. These are in principle integrational tasks. Different dimensions have to be integrated into the totality of the qualification and their work. Often the demands that are made in individual cases must appear contradictory to the trainee until they are integrated into his or her competence. Integration in such cases often means mediating between contradictory needs. That does not mean that both elements have to be absorbed into one entity before they can be integrated, but that the subject learns to balance them out as a situation full of conflicts.

109. In the national reports the following aspects turn up in very different ways and different levels of significance are attached to them. They may be summarized as follows in order to illustrate the level of complexity of the discussion and how the problems are seen by the learners and, to complete the picture, by the training staff:

- Trainees should integrate working and learning cognitively in performing tasks. (How is this task which I have to perform made up? What are its prerequisites?)
- Trainees should work and learn to integrate considered and anticipatory action beyond work itself. (What consequences follow from what I have just heard for solving practical problems? What could I do with the knowledge that I have just received?)
- Trainees should derive sensory perceptions from practice which help them to learn from information acquired cognitively. (If I imagine I had to do that, how would this information help me?)

- Trainees should grow accustomed, unconsciously where the situation arises, to certain actions which integrate the activities demanded into the existing register of actions. (How do I gain confidence in my new task?)
- Trainees should connect real work with reality through simulation. (If I imagine the concrete conditions of my working practice, how would I adapt the problem-solving behaviour that has been simulated?)
- Trainees should connect instrumental action and generative rules of action. (What is the difference between acting according to the formula or regulation that I have been given and the extent of the models for behaviour in other situations?)
- Trainees should learn in time how different practical experiences coalesce to form a unified image, to distinguish this from practice in other jobs and compare both constructively in order to extend their own competence. (What patterns of work determine the different demands in practice, and how can I use the space allowed to me for action productively?)
- Trainees should learn cognitively about the difference between the technical rules of concrete tasks and the technology that these tasks generate. (If I want to participate here in school or at work by voicing my criticisms, I have to be able to explain why a particular procedure is less meaningful than another!)
- Trainees should distinguish different forms of knowledge from each other and be able to relate them to each other, for example declarative knowledge and procedural knowledge. (How can I agree with others why something should be done the way that it is done? The latter is often not obvious, the former is not explained if I simply say what I am doing.)
- Trainees should connect basic theoretical knowledge with applied knowledge. (If a foreman explains to me how a particular item is to be installed, I have to know whether he is giving an instruction that is specific to a particular context or whether he has applied a basic rule.)
- Trainees should where necessary identify a lack of specialist knowledge as a lack of skills. (What do I have to know to solve a new problem, and how can I use this knowledge in practising this skill?)
- Trainees should mobilize their emotional resources in training their abilities. (How can I become enthusiastic to learn about what I cannot yet do?)
- Trainees should refer social abilities to the special learning tasks. (How do I motivate those who are competent to help me to learn? How can I win over others to co-operate on particular jobs?)

- Trainees should learn to develop virtues relevant to work in such a way that these allow them to act effectively without career and work becoming too strictly limiting of other areas of life. (How can I commit myself at work to work without my friends and family beginning to think I am turning into a workaholic and capable of thinking of nothing outside that field?)
- Trainees should carry out tasks asked of them now in a stable manner and be prepared to change at any time. (How can I manage to do my work reliably and at the same time pay attention to what is expected from me by new tasks?)
- Trainees should learn to optimize the completed actions they have practised and to decide how these could be changed. (How do I learn to discover whether I cannot proceed any further with my present patterns of action and where I must change my actions?)
- Trainees should learn to follow directions and act independently. (How do I avoid my boss either accusing me of waiting for instructions or doing things I am not permitted to do?)
- Trainees should show themselves able and ready to specialize or to generalize their abilities. (How do I best decide whether I should learn to use a particular machine better than anyone else, or whether I should prove that I am good enough to work at different machines?)
- Trainees should show willingness to limit their own competencies and only extend them in individual instances. (How do I learn to manage the fact that I have to put my own needs aside in order to show that I can may be considered for new tasks?)
- Trainees should learn in school how to satisfy the demands of different subjects and integrate them to achieve full competence. (What are the specific performance demands in individual subjects and how can I form them into a coherent whole?)
- Trainees should refer subjects and practices to each other in a productive manner. (How do I manage not simply to play off what I have heard from the teachers about work against what the firms tell me about it?)
- Trainees should learn to compare practices with each other so that they can use the differences between them productively. (What does the fact that Firm X does things differently from my own firm tell me?)
- To each of the tasks on this list there is a corresponding task for instructors, in so far as they are concerned to help their trainees. One might even say that the professionalism of the training personnel to a large extent depends on whether they are able to integrate what they are demanding from their trainees into their actions.

110. Furthermore, a series of other tasks relating to the organization of integrated learning are named in the national reports:

- Instructors must bring their own competencies into the educational process that they are responsible for in a co-operative way.
- They must compare their own experiences productively with those of the students and derive impulses from this.
- They must act as moderators to integrate the expectations of the trainees into a collective process.
- They must shape the stages of learning in such a way that the trainees will be able to see them as a coherent and meaningfully structured sequence.
- They must follow the systematic structure of their subject in such a way that the trainees will not see an insurmountable discrepancy between this and the systematic development that occurs in practice.
- They must create an arrangement for the functional division of labour between the learning sites in such a way that action in practice and education in school can be experienced as self-referring unity.
- They must determine the tasks for practicals in such a way that these do not contradict practice itself and are worked through productively in succeeding lessons.
- Projects and simulations in school must be designed in such a way that they both make the goals of the subject teaching manifest to the students and help them to evaluate these and allow them to transfer ideas into the reality of the work situation.
- At the level of teaching, the materials must be built up in such a way that they do not contradict the expected competence goals. Directions at work and applied tasks must challenge the competencies of the students in such a way that they are both able to show what they can do and be motivated to learn new things.
- Instructors must know when they should push for receptive learning and when they should promote independent working through problems.
- Instructors must mediate between the individual subjective prerequisites of trainees and the general qualification aims.
- Instructors must know when they should use individual working to deepen knowledge of a topic and group working to introduce new tasks.
- Instructors must be sensitive to the problems that trainees often experience during training in mediating between their own qualification aims and general qualification aims.
- Instructors with different responsibilities must take care that the form of examinations does not contradict the integratively practised structure of the learning processes. For example, a form of training

that is all-round in its outlook should be connected with an equally all-round examination.

- School administrators should ensure that the rules for awarding entitlements do not contradict the content of those qualifications when they are codifying the system of integrated learning. This is for example the case when double examinations are imposed in order to gain a certificate when only one integrated examination follows on from the course.
- At the macro-level educational planners must define the share of time and content of the sites of learning in such a way that practice can be prepared for effectively and competence built up successfully.

111. As a rule integration tasks turn up in the textbooks on vocational track education in the way in which the learning aims are described. By and large a unified linguistic rule is apparent in the OECD countries. For example, in the Dutch report this is expressed as follows:

112. These competencies aim to develop in students/apprentices capacities related to: communicating; collecting, analysing and organizing ideas and information; planning and organizing activities, individually or in a group; team-work; solving problems; using technology; learning to learn; initiative; interpersonal skills. Similar catalogues of aims can be found in all the other reports.

113. The purpose of these impressive lists is to emphasize the challenge associated with integrated learning. The contradictory aspects that have to be integrated when it comes to planning integrated learning projects become obvious. It cannot simply be a matter of drawing up a comprehensive planning model, rather it is a matter of using the practical experiences of integrated learning that have been garnered under specific conditions in a fruitful manner.

114. The reports make clear that anyone who acquires occupational competencies learns to master all of the things listed above through integrated learning. But he or she does not acquire everything in the same way or to the same level. In integrated learning it is not so important that learning occurs, but that it is developed in as rich a manner as possible, and that means that the organizational structure and teaching methods must be defined in such a way that they give as many impulses for learning as possible in this direction.

3. Integrated learning at the macro-level of schools and training centres and at the intermediate level of educational pathways

115. Initially, this section will deal briefly with the value attached to the concept in the context of school and training structures in most of the national reports. Which institutional distinctions or precautions characterize the various education systems and how do they promote or obstruct the school conditions for integrated learning?

116. Following this, we shall look at some examples which illustrate the mainstream in terms of the way in which "integrated learning" is conceptualized and which illustrate typical forms of respective national programmes in the variation in school structures that provide the basic background conditions for integrated learning.

117. The starting point for integrated learning is to a large extent determined by the dominant way in which vocational training and education is institutionalized in the countries concerned. In all countries there are:

- apprenticeships,
- pathways involving full-time school,
- institutions that prepare students for an occupation, and
- a hierarchical training system
- with different opportunities for transfer to further diplomas and degrees.

118. In every country there is also a basic shape which characterizes the whole system and sets standards. Here the countries differ as to whether they concentrate more on the dual system with apprenticeships or on full-time schooling, which as a rule involves a longer period of specialized training in the workplace after it.

- In the USA and in France reforms proceed from the fact that the majority of young people are in high-school, or in a vocational high-school, or rather lycée when they reach the age at which they could begin vocational training.
- In Germany or Switzerland all internal and external reforms centre on modernizing the dual system or rather, whenever it is a matter of full-time school, alternatives are evaluated in relation to it.
- In countries like the Netherlands or Denmark, in which neither a dual system nor an extended high-school stage predominates, it is mainly a matter of establishing hybrid forms, such as, for example, different pathways to occupations in predominantly school-based or firm-based forms.

a) The Netherlands

119. Elly de Bruijn et al discuss what they consider to be the two central interventions in integrated learning as follows: "Both in junior secondary education and in senior secondary vocational education initiatives are being made to revise the curriculum in a way which resembles some key elements of integrated learning. The reform within junior education is very recent and is interesting because a) it is supported by national policy and the educational support structure; b) all junior secondary schools are participating, and c) it explicitly concentrates on implementing a competence-based way of teaching and learning.

120. In August 1993 a common curriculum, Basic Education, was introduced within the first years of secondary education. Basic Education consists of a - compulsory - core curriculum which covers 15 subjects clustered in teaching areas. The core targets for each of the fifteen subjects are set by the Ministry of Education and Science. Schools are obliged to assess whether students have achieved these core targets. Also, an advisory table of hours to spend on each of the subjects is set by the Ministry; the total number of hours equals 80% of the time available in three school years. Students have to complete the core curriculum of Basic Education within a minimum of two years and a maximum of four years. All secondary schools are obliged to offer teaching programmes which make this variable duration possible.

121. The government does not prescribe how to achieve the core targets. Tests are being developed to assess the results. These tests will be the same for all students, but they will assess knowledge and skills at two levels of ability. After having passed the test successfully, students will receive a certificate of basic education (also indicating the ability level at which they passed the tests). As full-time education is compulsory for the first 11 years (7 years of primary education starting at age 5 and 4 years of secondary education) and Basic Education is not a qualifying programme for the labour market or further education, students still have to attend additional programmes within (full-time) secondary education to obtain a diploma.

122. The government is stimulating the integration of different secondary schools, but there is no obligation to merge. Basic Education can be regarded as a compromise between supporters of comprehensive schools on the one hand and those who did not want any integration at all on the other.

123. Now that Basic Education has been established by law, the discussion has shifted from disappointment among supporters of the comprehensive school and fear among teachers and school managers about the practical consequences of Basic Education, towards a discussion about educational content, new teaching methods, new goals and new teaching styles.

124. Admission to vocational education and training in the Netherlands occurs after 11 years of full-time education, i.e. after compulsory - full-time - education. VBO - junior secondary vocational education - can be perceived as a preparatory programme. Vocational education at senior level falls chiefly into three categories: a) senior secondary vocational full-time education (MBO, consisting of long and short courses); b) the apprenticeship system (the school component is provided by CBO-schools, which are often integrated with colleges for MBO); and c) higher full time vocational education (HBO). HBO is a

programme at tertiary level, i.e. at the same level as university, but having a somewhat lower status.

125. Innovation in senior secondary vocational education started some 15 years ago, and although the experiment was initially supported by national policy, it turned out to be a more marginal reform in its scope (only affecting some schools and courses) and in its innovative perspective (by the watering down of the original concept) than had been hoped for.

126. The innovational concept known as "learning by participation" has its roots in the movement of the 1960s and 1970s which strove to provide for equal opportunities for working youngsters. At that time no educational provision was available for young workers with "low" qualifications who did not want to enter full-time courses, but still felt the need to learn something. Also, the low participation rate of 16 and 17-year-olds was a matter of concern to the government.

127. In the late 1970s several specific commissions on educational provisions for 16 to 18-year-olds suggested that the duration of full-time compulsory schooling should be lengthened. Also, they suggested the introduction of part-time compulsory schooling for the 16 to 18 age group. Additionally, they introduced a new curricular concept for this kind of part-time education and this group of youngsters - "learning by participation".

128. This concept implies a kind of education or training based on providing or creating guided experience in practical and realistic settings by transforming them into (new) learning experiences.

129. In 1979, a watered-down version of "learning by participation" was implemented by creating short full-time (!) vocational courses for the disadvantaged (especially unemployed youngsters). The idea of using students' social experiences in the contents of a learning programme was abandoned, at least partially. The idea of combining practical and theoretical learning and arranging the content of the courses according to "realistic" units of occupational practice remained. A focus on students' individual approaches to learning now prevailed.

b) Denmark

130. In 1991 new legislation on vocational education was introduced in Danish vocational education, replacing two older arrangements and combining their main characteristics. Vocational education under new legislation consists of a first school-based year and a second company-based practical training period. Denmark's government has taken on the job of realizing the integration of learning in holistic terms. This attempt is limited by the administrative capabilities of a small country and the half-hearted attitude to reform above all in respect of examinations, which have remained largely unaffected. Subjects are supposed to be integrated but are still examined separately.

131. A distinction should be made between technical and commercial education. There are some 60 technical schools, offering five courses in different trades. The courses consist of a first school year and a second company-based period, lasting two years, alternated with a few short periods (of two weeks) at school.

132. After the first school year students are also allowed to choose a school-based pathway, leading to either commercial high school or technical gymnasium, which gives access to university. Many students, particularly in commercial schools, take this track, for example, 50% of students starting at Copenhagen Commercial School take this school-based pathway. The majority of students from technical schools choose the company-based practical training after the first school-based year.

133. In Denmark, reforming efforts are aimed on the one hand at optimizing the reciprocal relationship between school and firm-based training, at integrating project-oriented working methods which promote independence in the learner, and on the other hand at helping young people who have not transferred successfully to vocational training or to a job to gain qualifications. The report concentrates on such models.

c) Portugal

134. Belmiro Cabrito summarizes the development of vocational education in Portugal in the following way:

135. During the eighties a set of actions were implemented which sought to create a more vocational training within the education system. This training was divided into a professionalizing path, created in 1981, and a technical-professional path, created in 1983.

136. The professionalizing path (1981) is aimed at youngsters who have completed their 11th grade and wish to prepare themselves to enter occupational life, which will occur during their 12th grade (the last year of secondary studies). It is thus a predominantly school-based technical training.

137. The technical-professional path (1983) includes both technical-professional courses and professional courses.

138. The professional courses (1983) are aimed at a target population of youngsters who have completed the 9th grade. The courses last only one year, which is followed by a six month training period in a firm. This kind of training is sanctioned by the professional training diploma of a semi-skilled worker.

139. The technical-professional path (1983) is also directed at young people who have finished their 9th grade but who wish to receive further education. It lasts for three years, and at the end the students receive secondary studies and technical-professional training diplomas. This path gives access to university.

140. This kind of education tries to meet the needs of regional development and to offer a qualifying professional training. It is characterized by a curriculum structure based on a strong professional component and on the possibility of taking training posts in firms. Even though these training posts are a part of the course curriculum, they are not compulsory. In either case, the corresponding technical-professional diploma is given to the students, independent of the fact that they do not have to take the training posts. Getting a training post has sometimes been very difficult, owing to the

small number of companies or firms which are available and ready to receive the youngsters.

141. Besides, these vocational training courses sometimes work, for those who attend them, as a safeguard in case they do not gain access to university, giving them a kind of training which ensures them entrance into the labour market at a more qualified level.

142. In 1980, pilot versions of alternance training were implemented. The Ministry of Employment and the Ministry of Education held joint responsibility for these trials, which created the Apprenticeship System in 1984. This form of training is the combined responsibility of both the Department of Education and the Ministry of Employment, with the latter administering the system.

143. This vocational and technical education system assures to youngsters simultaneously that they will complete compulsory schooling successfully and prepare for a specific professional profile that will help them enter a specific job. The growing professionalization of the Portuguese education system in the 1980s reached its peak in 1989 with the creation of the Professional Schools.

144. The Professional Schools have been specially devised according to development needs at both local and regional levels and aimed at producing intermediate technicians as well as highly-qualified professionals. They have pedagogical, financial and administrative autonomy from the Ministry of Education, and they derive from programmes and agreements negotiated between the Education Department and the promoters, who are social partners with responsibilities in local development. Each Professional School and the courses it offers should derive from an analysis of local development needs.

145. The vocational school-based path (around 35% of students in secondary education) offers technological courses for each branch referred to in a) and was devised for youngsters who do not wish to pursue university studies and whose objective is to enter an occupation after leaving secondary school. The structure of these courses is similar to those mentioned in a), but the technical component is more important in the total duration of the course.

146. The technical component emphasizes "integrated learning, as its aim is to connect theoretical knowledge with practical experience through subjects like Technology and Practical Work or Laboratory Practice and through several forms of work experience. These disciplines allow the integration of theory and practice thanks to seminars and workshops, visits to companies, shadowing, training-on-the-job during the courses, final stages in enterprises, etc.

147. This component may actually be identified as an integration space for different learning activities, where integrated learning between the specific and the technical disciplines may be implemented, as well as through knowledge gained in work experience. This path leads to a secondary studies diploma, a professional certificate (level 3 - qualified worker and intermediate technician) and allows access to university.

148. In the regular education system the programmes of each discipline are centrally organized and equal throughout the country. Teachers are advised to use active methodologies in their teaching: team work, project methods and

community knowledge, etc., in order that students acquire the tools to search for, acquire and process information and to understand the strong links between theory and practice.

149. There are also forms of Vocational and Technical Education which fall outside the regular education system:

- the Apprenticeship System is a form of "alternance professional training" designed to answer the needs of enterprises for skilled labour. This is one more work-based system that takes the firm as the more privileged training space and allows integrated learning to develop through simulated practice and training-on-the-job, both of which play a part in the curricula.

- Professional Schools form a technical and professional alternative training to the vocational teaching within the regular education system. They allow for integrated learning through simulated practice and work experience in the curricula.

150. In general, some competencies are common aims of all education and training systems because our post-Fordist society demands more and more broad-based, flexible skills and the ability to adapt to changing conditions.

151. These competencies must provide the basis of an improved connection between general and vocational training, between theory and practice, between learning acquired in different contexts and under different conditions, that is, they should guarantee integrated learning.

d) France

152. The French situation is currently characterized by a dual tension. This consists on the one hand of a policy of working towards more students with higher qualifications (80% to receive the baccalauréat), which is associated with the devaluing of paper qualifications, something now blamed for the high rates of youth unemployment. On the other hand, it consists of the aim of increasing the porosity of the system and the resulting confusing complexity of educational pathways.

153. In the documents of the Marseille conference there are two diagrams in the French contribution on the structure of the French educational system. The first of these presents a somewhat idealized view, the second is a more concrete representation. These diagrams are found on the next two pages.

154. The French are obviously concerned to develop various integration structures in parallel. At the same time, forms of full-time schooling continue to predominate. Here it is principally a matter of complementing the paths to tertiary education, in particular those of a vocational nature. Recently, great efforts have been made to reinforce a professional baccalauréat with initial stages that count towards occupational qualifications. These are the BEP ("brevet d'études professionnelles"), which takes in a greater range of occupational fields, and the CAP ("Certificat d'aptitude des professionnels"), which represents a narrower interpretation of occupational relevance. These paths are as it were "oriented upwards" towards the tertiary sector with - as in the Portuguese example - a back-up "insurance policy" of vocational

Figure 1

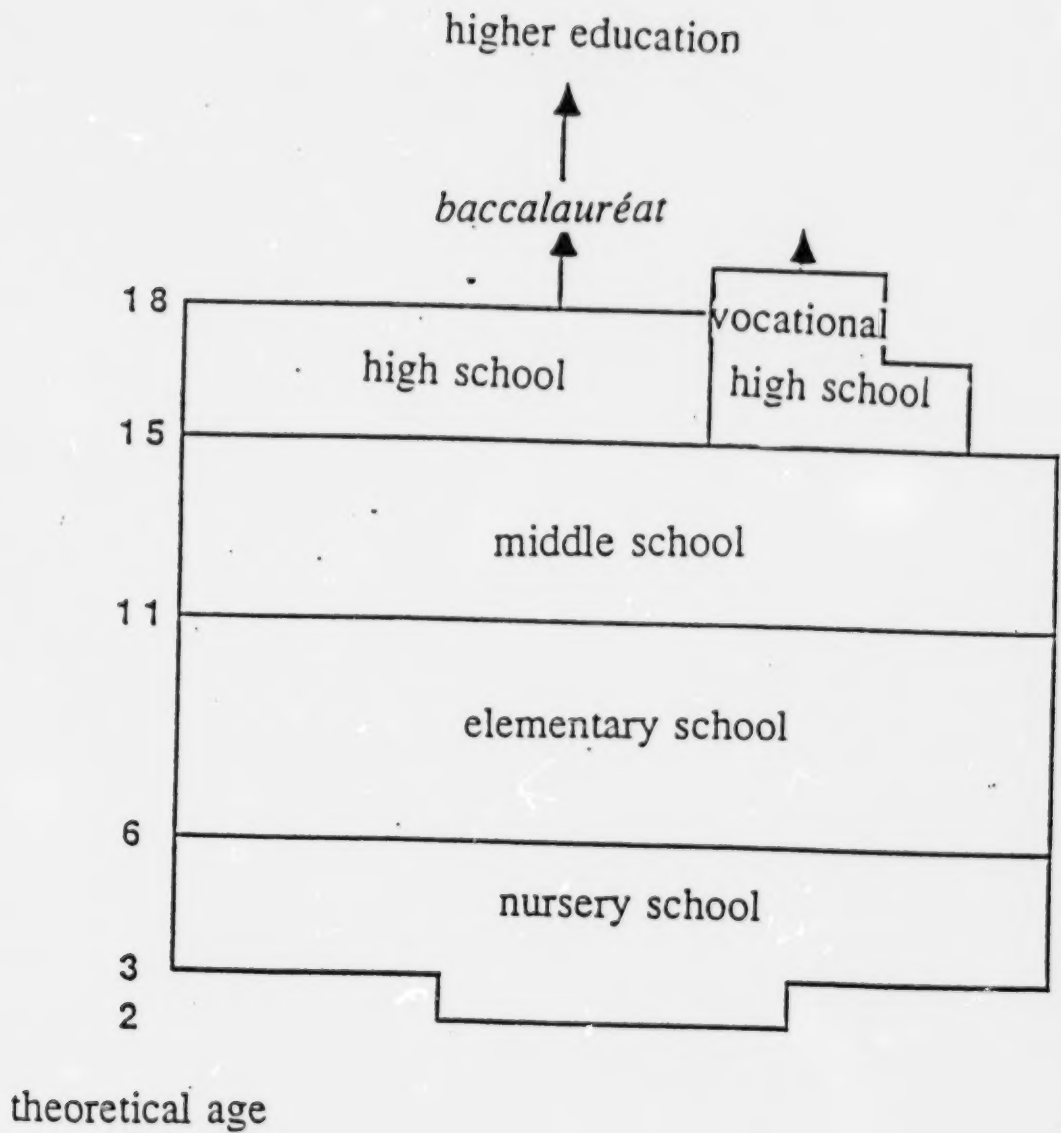
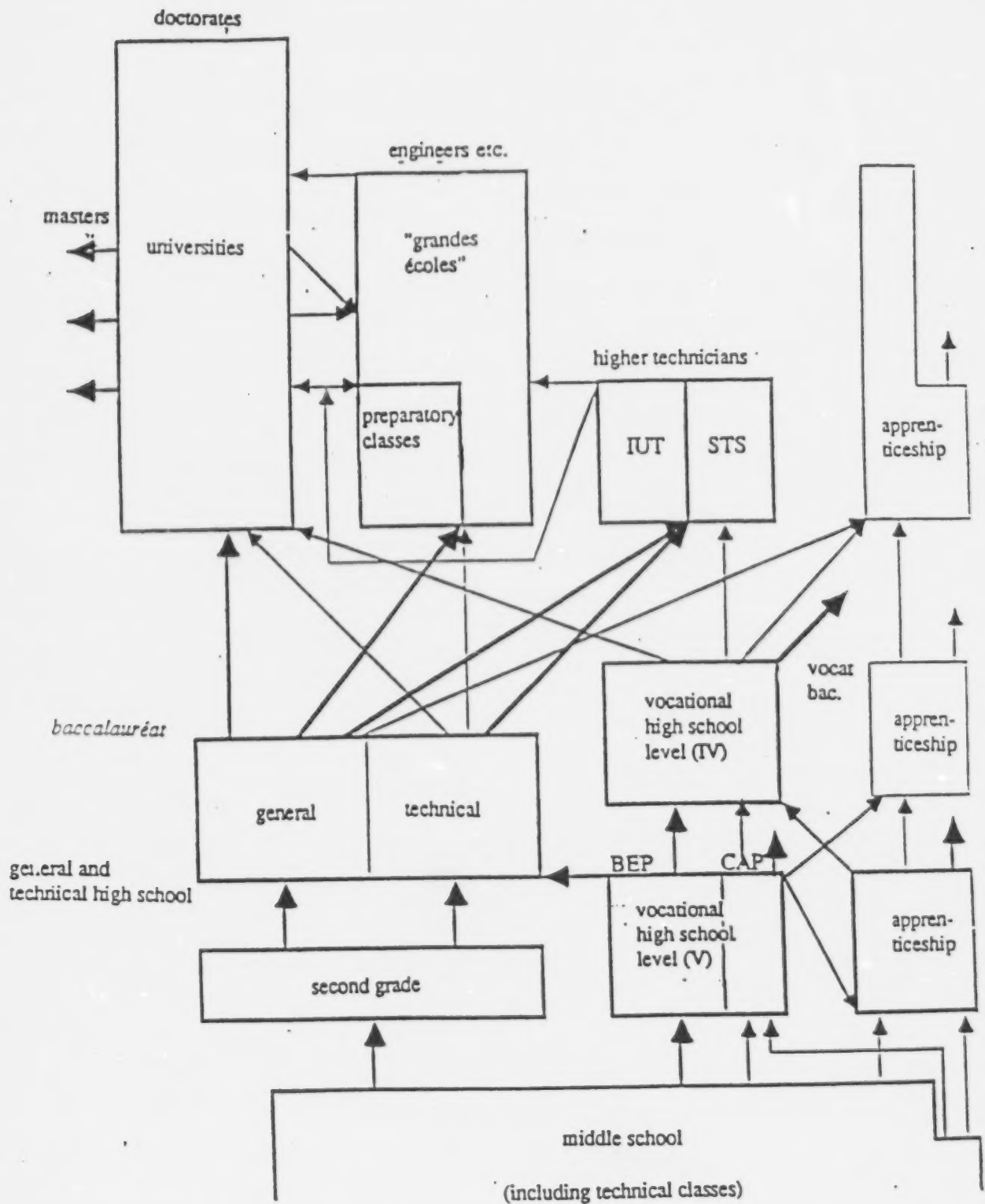


Figure 2



capabilities. The tendency in these cases is towards models of dual qualification.

155. These intermediate pathways are notable for their long duration (2 years for the BEP, 3 for the CAP) and their hierarchical interpretation of specialization. Since 1987, in parallel to this full-time school pathway, trainees completing an apprenticeship have also been able to use their qualification to proceed to further educational pathways right up to becoming fully-qualified engineers. This initiative was little noticed at first, because of the traditional prejudices against practical education and training, and because students were not well informed about the newly established opportunities. With time, however, there was a significant rise in the number of trainees. Although the figures have stagnated somewhat more recently, this is largely attributable to the economic situation.

156. The second diagram makes clear that, unlike in Germany, apprenticeships are not the sole medium for obtaining a first vocational qualification, but that they are built up across the hierarchy of certificates. There are both traditional apprenticeships in manual skills and new pathways to becoming an engineer through an apprenticeship.

157. The figures for the number of students gaining certificates in the main pathways draw attention to the central problems of this education and training system. In 1980-1991 the French succeeded in lowering the percentage of school-leavers with no qualifications from 16% to 11%. The proportion of students gaining a baccalauréat (level IV) rose in the same period from 17% to 25%. In total 63% of the age group reached the baccalauréat. At the same time, the number of fully-trained skilled workers fell from 48% to 31% and the number of students on full-time academic courses rose from 19% to 33%.

158. In France, therefore, vocational education has been the loser in these developments. So it is no surprise that integrated learning is directed particularly at key-points in the transitions.

159. The French report-writer Ginsbourger concentrates as a result on the following three measures:

- 1) In the mid-seventies a programme of "nouvelles qualifications" was begun, modelled on an initiative begun nearly ten years earlier to upgrade the qualifications of miners. It was supposed to offer new vocational certificates that would be valuable in the future and help to integrate poorly qualified young people into work. In contrast to the traditional "Cartesian" training, which emphasizes the primacy of theoretical over practical knowledge, trainees are sent first into firms in order to acquire practical experience, which later becomes the starting point for structuring knowledge to be acquired. This opening period is followed by a training period marked by a relatively rapid rhythm of alternation between the two sites of learning, which is supposed to allow students to synthesize theoretical and practical learning. Students are not trained for a specific occupation. Instead, acquiring key qualifications is promoted with the aim of permitting students to deal with professional problems more independently and giving them a greater degree of occupational flexibility. Acquiring such

qualifications is achieved by successively increasing the complexity of the training and working tasks to be carried out. Continuous discussions and arrangements between the supervisors in firms and the vocational school teachers ensure that learning does take place in parallel and that progress is examined.

The experiment has proved successful precisely in the case of young people with little in the way of prior qualifications. By means of this "inductive" pathway they were not only in a better position to process the knowledge that had been imparted to them, but were also made more secure in their consciousness of themselves as professionals and motivated to go on learning by the call - occasionally a frustrating one - that they should look for solutions themselves.

- 2) With the establishing of the *Baccalauréat professionnel* in 1985, which met with general acclaim, there was some question as to how the traditional schism between theoretical and (subordinate) practical training and education might be overcome and how the co-operation between schools and firms might be intensified. Innovations in this area were largely down to the firms, who attempted to organize training in such a way that work does not merely appear as the application of what has been learnt but itself as the starting point for the learning process. With this aim in mind, a series of four successively more complex firm-based educational pathways was developed, in which the work processes were built up in such a way that theoretical knowledge acquired in school could find an application. In this way, the individual learning strategies of the students were taken into account. They were encouraged to think out the relationship between theory and practice themselves, a topic deliberately avoided in school.
- 3) The third project is at a higher level of qualification. It consists of a dual training and education for engineers, who go through a five-year training period after the *baccalauréat*, of which two years in total, divided into several courses, are to be spent in firms. Three substantial aims were being pursued in this scheme:
 - a "capacité technologique", which covers the basic technical knowledge,
 - a "capacité méthodologique", which refers to the mastering of various procedures (information processing, organization of work, but also negotiation and communication strategies), and also
 - a "capacité de l'intelligence de l'environnement", by which a general education aimed at theoretical problems and the consequences of technology is meant.

e) Germany

160. The German development - already referred to on several occasions in this report - is characterized by the division into an early form of dual vocational training and preparation for further studies in the long form of schools (in particular, in the *Gymnasium*). In the federal structure of the German republic the individual states have attempted to lessen the difference between the two educational pathways in their own separate ways and using their own separate strategies.

-- Many of the federal states have begun long-lasting large-scale experiments to add a third integrated system to the existing two, one designed perhaps to replace them. Initially, in the 1970s, almost all the federal states began individual trial experiments with dual-qualifying integrated pathways. Many have derived more extensive programmes from these. The educational policy climate in the grand reforming period from roughly 1966 to 1974 was marked by a hope that the two systems would converge. The upper level of the *Gymnasium* was opened up to vocational syllabus components for the first time in its history, and of vocational training it was said that it was increasingly characterized by a tendency towards the academic in its activities. Everything seemed to point to the two systems growing into one. However, as early as the mid-seventies resistance to this convergence was forming alongside objections to the expansion of the educational system in general. By the end of the 1970s the topic of integration had slipped to the bottom of the policy agenda.

161. At present, only the federal state of North-Rhine Westphalia still has ambitions towards a replacement for the existing system in the shape of its collegiate school (*Kollegschule*) experiment. This involves in practice 36 model schools. In all other federal states the plans failed under pressure from the *Gymnasien*. It was no longer possible to bring together the demands of vocational education with the more severe conditions of general education in the "*Gymnasium*".

162. In the *Kollegschulen* attempts are made to make every form of vocational training as porous as possible so that within the medium of this form of training entitlement to higher education - either at a technical high school or at a university - can be gained at the same time. By means of a new curriculum and new time-tables and examinations it is possible for young people to create the basis for preparing to enter technical high school during the period of their vocational training. In designing integrated pathways planners fall back on the whole programme of vocational education and training, not solely on the dominant form of dual education and training, but on full-time school pathways as well. Almost everything defined in the list in chapter 2.2. was tried out. Schools were integrated, there were training sites, teachers' groups, students' groups, subjects, exams, plans for putting things into practice and plans for courses and so on. This school experiment, the longest and most complex in the history of the Federal Republic only produced model solutions. There is no question of all the model schools having realized all the characteristics of the plan in all educational pathways.

163. The history of this experiment has much to tell us about any systematic approach to reform, as all the restrictions and constraints that appear when

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integration is attempted can be seen in it. This is above all true for the forms of the paradox of integration. To give just one example, dual qualifications were publicly and vocally referred to as suspect at a very early stage. It was said that they led to an Abitur on the cheap, that integrated schools were not dual schools, but only delivered half an education, that it simply was not possible to combine the fruits of higher education with technical matters. Public pressure on the integration experiments led to ever stricter conditions with repeated references to the importance of standards when it came to the Abitur. The effect of these restrictions was that only very few young people mastered the increased workload, and correspondingly few passed both exams. Many of those who were responsible for the pressure on integration experiments then criticized those experiments as elitist and informed the public that the experiments were not worth the effort, because too few students would benefit from them. In saying this, they conveniently forgot that the experiments with dual qualifications also benefited students following single qualifying pathways, because these students were integrated within the same curriculum.

-- Other federal states placed more value on developing further vocational schools by adding occupationally-oriented, preparatory or study-related pathways. In doing so they have raised the status of the vocational school but not of dual education and training. In many federal states large numbers of students have begun to come through such educational pathways in vocational schools. As a rule, one or two subjects that have up till now been alien to an academic curriculum are integrated into the students' time-table. For example, they opt for electronics or mechanical engineering and continue on to Abitur with these subjects after three years. Sometimes these pathways are accompanied by co-ordinated periods of practical training. In many vocational schools this development has led to simultaneous integration and disintegration. Dual training and education has only rarely benefited from it. Frequently, the difference between a superior general education and vocational education has been strengthened, since the vocational Gymnasium within the vocational school sought to cut itself off from the perceived "lower" dual form of education and training. The result was a new form of differentiation.

-- In parallel to this development, the debate on integration was characterized above all by the modernizing of the dual system. This referred in the first instance to the aims of education and training and secondly to the institutional circumstances. Debate on reform brought with it a reorganization of occupational profiles and occupations, along with a tendency to moderate what had been up till then in some cases an extremely developed differentiation of training professions. Integration took the definition of comprehensive qualifications of a formal and material nature as its starting point to justify a restructuring of occupations. The first training year in firms and in schools was to follow the same pattern for related occupations. Training itself would then fulfil the changed demands of the workplace by passing on the new key qualifications. The functions assigned to the two sites of learning would converge. In the future, schools were supposed to improve their practical relevance as a site of learning by means of "action-oriented

teaching" and secure their trainees' ability to take action. Recently schools have been provided with modern equipment in a relatively lavish manner. Modern CNC machines in many schools offer young people who do not get a chance to get to know these machines at work an opportunity to train on them. Conversely, firms are to deal more closely with the theoretical and technological questions of occupational activity. The growing tendency to take academic approaches to vocational activities is taken into account by the way in which the conceptional, strategic and systemic aspects are clarified. It is self-evident that the attempt to realize such high reforming goals must run into many difficulties. In this sense the reform is not yet complete.

164. Lately the equal value of general and vocational education has been much discussed with reference to the modernized form of training and education. This is no longer or not mainly a re-run of the old discussion about integrating general and vocational education, but a discussion about recognizing different forms of education as being of equal value. The aim is clear. It is a matter of making dual education and training attractive to those who have turned their back on it after passing on to *Gymnasium*-based education. This strategy is of course contradictory and probably doomed to failure because, while asserting that the two forms are equal in value, the authorities do not grant students entitlement to higher qualifications. There is much talk of dual qualification having been attained in terms of content and material, but students are still refused the formal Abitur that would mark a real equivalence.

165. Experimental alternatives are presently being planned and tried out as a form of special training for students with Abitur or who are already taking the Abitur. Vocational academies (*Berufsakademien*) have been founded for up-and-coming skilled workers at the higher level. Mixed forms of vocational education and training and technical high school training in a dual form are planned. As much as these models contribute to raising the perceived value of what used to be vocational education and training, they are also accompanied by new forms of disintegration. Many people are already speaking of unceremoniously abolishing the dual system as the means to achieve a unified path after the first stage of secondary school because the models that are being tried out will lead to a hierarchical division of vocational education training into several levels.

f) The United States

166. Margaret Vickers emphasizes in her report that integrated learning "is aiming not only to revitalize both academic and vocational education, but also to address the problematic nature of the relationship between them.

167. In the context of these English-speaking countries, three objectives for integrated learning can be identified:

- the objective of narrowing the gap between academic vocational education;
- the desire to integrate subject matter from different disciplines; and

-- the goal of contextualizing learning by locating it in realistic settings."

168. Various structural problems in the American school system form the background to this development. Vickers emphasizes particularly the "lower status" of vocational education. "This is especially true in the United States, where vocational education is often delivered in separate programs or "tracks" within the comprehensive high schools. Tracking has been extensively criticized, because it locks students into low-status programs and restricts their future educational and career opportunities. Historically, in most English-speaking countries, post-compulsory schooling was principally concerned with preparing students for university admission. Students who were not intending to enter higher education simply left school to work.

169. In Britain and Australia a substantial proportion of these young people gained apprenticeship training in the traditional crafts and trades, but in the United States, apprenticeship training had largely disappeared by the beginning of the nineteenth century. To this date, apprenticeships have not re-emerged as a formal component of the education system in the United States. Even in Britain and Australia, the proportions entering apprenticeship training have fallen in the last thirty years. By the end of the 1980s, approximately 10% of Australian youth and approximately 5% of British youth were involved in formal apprenticeship training.

170. As a result, and in view of the fact that the English-speaking countries have extensive comprehensive school systems, vocational orientation and gaining vocational qualifications have to take place mainly by integrating them into general education. Since the thinking behind comprehensive schooling has to a large extent been undermined by a performance-based differentiation through vocational orientation, a programme of integrated learning has to distinguish itself by improving the image of the vocational aspect.

171. "The political mandate and the financial support for integrated learning reforms in the United States today is provided by two recent federal government acts: the School-to-Work Opportunities Act and the Carl D. Perkins and Applied Technical Act. Although the two acts target somewhat different populations, both acts function in a complementary way. Both explicitly espouse "curriculum integration" as a key goal. Both seek to eliminate the distinction between abstract (academic) education and functional (applied) education by presenting theoretical ideas in work-related contexts or in actual work settings.

172. The United States federal government provides approximately 10 per cent of all the funding available for secondary-level vocational education within the states across the country. These funds are authorized under an act known as the Carl D. Perkins Act. In order to receive Perkins funds for the 1990-95 period, the states were, therefore, required to establish plans for implementing Tech-Prep programs within their high schools, technical high schools, and area vocational colleges. Tech-Prep is an organizational and curricular reform for preparing students for high-technology careers whose entry point is graduation from the community college. In Tech-Prep programs, students are engaged in four-year (two plus two) or six-year (four plus two) programs, which give them competencies required for such careers. At the secondary level, completion of a Tech-Prep program leads to admission to a

Community College associate degree program. A full Tech-Prep program involves completion of a two-year associate degree from a college.

173. As a structural and organizational reform, Tech-Prep demands articulation agreements which align academic and vocational coursework into a common core at the secondary-school and community-college level. Tech-Prep also advocates the creation of integrated academic and vocational studies which cover all aspects of an industry. Rather than simply learning the manual skills required in the construction field, students will be introduced to the historical, legal, and administrative aspects of this industry. Industry-based education takes the place of specific job training.

174. Collaboration with the business community is a critical part of Tech-Prep. It ensures that the curriculum is in line with the demands of the workplace. It makes work-experience opportunities possible for students at all stages in the program. Although Tech-Prep is commonly thought of as the vocational-educational alternative to a college-prep program, its graduates can be prepared to enter four-year colleges as well as Community Colleges, technical institutes or the workplace. The 1990 Perkins Act, the most ambitious approach to integration, involves efforts to reconstruct the American high school, and to develop a new vision of what secondary education should be."

175. As a further example Vickers cites the School-to-Work Opportunities Act:

"The history of the School-to-Work Opportunities Act reflects the ambivalent feelings Americans have about vocational education. Early versions of this legislation sought to "replace" traditional vocational education with a new, but rather poorly defined system of youth apprenticeships. With this broad mandate, the School-to-Work Act aims to expand opportunities for all students to enliven school learning by connecting it with workplace experience.

In some ways the title of this act is misleading. It is not, in fact, aiming directly to prepare high school graduates to enter the world of work. Rather than promoting the transition from school to work, the School-to-Work Act aims to encourage closer connections between learning at school and learning at work. Programs funded under this Act are expected to prepare students for the full range of post-secondary options. These programs are designed so that it is the student's performance and motivation at the high school graduation stage, not the programs they have chosen in school, that will determine whether they go to college.

Reforms flowing from the 1990 Perkins Act are trying to overcome a number of the problems which characterize vocational education in American high schools. These are: the lack of communication between academic and vocational teachers which is evident in most high schools, the lack of articulation between academic and vocational courses, the failure of most vocational programs to prepare students for post-secondary studies, and the narrowness and occupational specificity of vocational courses. Not all Tech-Prep programs address all these problems. If there is one defining feature of Tech-Prep, it is a focus on articulating secondary and post-secondary vocational and technical

programs, so that all students who graduate from a vocational track or a Technical High School are well prepared for further studies at the Community College level."

176. Vickers sums up as follows: "Organizational reforms which narrow the gap between high school academic and vocational programs generally contain the following five elements:

- a) conventional academic and vocational subject departments are eliminated;
- b) academic and vocational teaching faculty are organized into new departments, corresponding to broad occupational fields such as agriculture, business, trade and industry, public service, and health science;
- c) students are allocated to classroom groups which correspond to broad occupational clusters, and they remain in those groups for both academic and vocational instruction;
- d) time is allocated to allow the academic and vocational teachers within each broad occupational cluster to meet together;
- e) academic and vocational teachers work together to coordinate what they offer so that students experience courses that are consistent and mutually reinforcing rather than disconnected."

177. Vickers introduces the programme of the Career Academies as a further example of structural reforms:

"Without a doubt the Career Academies are the best-established form of integrated learning in the United States. The first Academies started in urban Philadelphia in the late 1960s and early 1970s, where their initial objective was to reduce high dropout rates in the city's high schools. Career Academies function as schools within schools. Typically, four teachers collaborate in an academy - one teaches mathematics, one teaches English, one teaches science, and one teaches the occupationally-oriented course that forms the core of the academy. Each class of students takes all four of these subjects, in an arrangement known as block scheduling. Typically, this means that students spend their time with the academy teachers in the morning, and spend afternoons doing courses elsewhere in the school, or going to work sites. In most academies, the classes stay with the same four teachers for two or three years. Other subjects - social studies, history, foreign languages, and electives - are taken in the regular high school outside of the academy structure.

The most common orientations for the academies include health occupations, business, electronics, computers, agriculture, public service, and travel and tourism. A single secondary school may create more than one academy. A structure adopted by some Technical High Schools is to have every student allocated to an academy, so there are, for example, six academies within the school. Schools which adopt this structure are providing broadly-based occupational programs which

integrate vocational skills with academic learning, so they are simultaneously meeting the requirements of the Tech-Prep and School-to-Work Acts.

There are now over 150 academies, most of which have emerged in the last seven years. During the 1980s the National Academy Foundation sponsored dozens of new academies, and in 1987, the state of California passed legislation which provided a stable funding base for the academies in that state."

178. Finally, Vickers describes one last example of integrated learning, the Youth Apprenticeships:

"The newest and possibly the most ambitious programs for linking learning in school with learning at work are America's youth apprenticeships. While youth apprenticeships take their inspiration from the German dual system, their advocates recognize the impossibility of re-creating German infrastructures in the United States. (For example, no attempt is being made to create national *Ausbildungsordnungen* for each occupation.) Nevertheless, at the local level, most youth apprenticeship programs include elements which suggest some resemblance to German apprenticeships. Jobs for the Future, a Boston-based organization which has taken the lead in supporting this model, defines youth apprenticeship as:

A systematic mix of academic instruction in secondary and post-secondary schools, integrated and concurrent with employment-based education and training for students - initial training sufficient to prepare an individual to perform entry-level tasks in skilled occupations.

Most youth apprenticeship programs include the following components:

- Work experience and mentoring at the work-site is provided by employers;
- Apprentices receive wages or stipends;
- Active, contextual approaches are used for classroom and on-the-job learning;
- In the classroom students reflect on and build upon their workplace experiences;
- Apprentices progress toward both advanced occupational training and further academic learning, and
- Apprentices receive recognized, portable credentials at the end of their training."

179. The Pennsylvania Youth Apprenticeship scheme (PYAP) offers an example of how youth apprenticeships work. PYAP emerged in the late 1980s, out of concerns expressed by both employees and educators in that state. Pennsylvania employers were concerned about the shortage of skilled metalworkers, and believed this could endanger the economic competitiveness of their state.

Around the same time, educators began responding to evidence that high school performance levels and high school completion rates appeared to be declining. Now, in 1984, there are five regions in the operation, all of them coordinated through the state PYAP office in York, PA.

180. Organizational arrangements for delivering the PYAP curriculum vary among the five regions involved, but there are several common elements. At each PYAP site, apprentices spend 16 hours per week working for local firms. They do "real" work, and they receive real wages. Using the milling machine, the lathe and the punch press, they contribute to the firm's production requirements. Firms have no interest in employing apprentices who are not productive, and those who do not contribute may be dismissed from the program. Not all youth apprenticeship programs pay wages to the students who are enrolled in them, and most of them do not have the level of state-wide support from employers that PYAP has achieved. In many cases, the drive to establish a youth apprenticeship program comes from the education sector rather than the employment sector.

181. At the time of writing (June 1994) the three models described in this section are recognizably distinct. Yet this may not continue to be the case, as there are evident pressures for convergence among the models. Up to 1994, the youth apprenticeship programs presented themselves as a distinct group. In all, 15 states had passed Youth Apprenticeship Acts, and these states, backed by organizations such as Jobs for the Future, sought passage of a national Youth Apprenticeship Act, which would lend further support to this model.

182. As things turned out, the new act was entitled "The School-to-Work Opportunities Act", and its terms of reference explicitly embrace other models, such as Tech-Prep and the Career Academies.

183. It is difficult to estimate how many students are enrolled in school-based programs that attempt to integrate classroom-based and school-based experience. A survey conducted by the National Center for Educational Statistics in 1990 put the figure at 3500 high school enrollments. In 1994, the figure is already higher than this, and with fiscal support provided by the School-to-Work Opportunities Act, the numbers of high school students involved will grow more rapidly in the future. There is already some form of work-based learning activity in all 50 states, and as new states introduce legislation to support these programs, the acts will be called School-to Work Acts rather than Youth Apprenticeship Acts.

4. Integrated learning at the micro-level of learning and teaching

184. The previous chapter described the external framework for integrated learning and the typical range of projects. In this chapter we are concerned with concrete attempts to put integrated learning into practice. These may be identified at an intermediate and at a very specific level. The former refers to integrated learning to the question of how far and in what form integrated learning is guided by its own theory of integrated educational processes. The latter refers to the teaching and learning methods which promote integrated learning in the teaching and learning process. It was originally planned that this report should describe how integrated learning is conceived of in educational pathways in all countries. This intention had to be abandoned because only the German report offered concrete comments on the subject. I remind readers of the fundamental contradiction that every successfully completed course leading to vocational qualifications follows the logic of an educational process (that can be reconstructed), and that within this logical process the external conditions of education and training can be dealt with, but at the same time, however, little of the knowledge acquired by instructors in their own practice is made explicit in the constructive interpretation of such courses. As soon as deficits in practice reveal that explicit knowledge would improve training, countries place their hopes on innovative plans and programmes, instead of researching the solutions applied in countries like Germany with established vocational training systems. Typically, good intentions are substituted for the lack of knowledge. Alongside this there is a trust in the "hidden curriculum" of education and training and a degree of autosuggestion. Intentions are formulated as if they were already effects. Nonetheless, many of the practical reports are particularly instructive, especially when they come from countries without a fixed tradition. In such countries, constituting new forms of integrated learning forces planners to reflect on problems which are dealt with by countries with more established traditions as if they were unimportant or already solved.

185. An analogous general observation may be found in experiments which seek to make integrated learning productive with respect to problem groups. Issues of negotiation are foregrounded here, since learners in this category do not participate in the same way as those in established educational systems. As young adults do not want to learn in the same way as if they were still in school a number of questions arise:

- How does one organize a vocational capacity for action when the learners are in fact already independent?
- How does one bring in the prior knowledge of learners and use it productively?
- How does one upgrade the seriousness of projects so that the learners can gain professional capacities through them?

186. Experiments which attempt to offer opportunities to poor learners after the upper level of secondary school by means of integrated learning are equally difficult and open to solutions and reflections. Since such students have already plainly failed within a normal pattern of schooling, other ways of passing on knowledge to them must be thought up which mobilize dormant abilities and potential for motivation. Not that all solutions will then work, but the special pre-conditions in such cases force us to generate new means of integrated learning. The following offers a selection of relevant observations on this theme from the national reports.

a) The Netherlands and Denmark

187. In looking at developments in the Netherlands and in Denmark the report-writers direct their attention not so much at the development of integrated learning in the normal kinds of pre-vocational and vocational schools as at particular models of dealing with educational problems through integrated learning.

188. Anyone who visits schools in Denmark and in the Netherlands is often struck by the naturalness of their open learning culture. The kind of teaching from the front of the class that, for example, typifies many German institutions seems to be far rarer in these countries. Teachers seem far less hidebound by rules and plans than elsewhere. Teachers are clearly taking advantage of the freedom to teach as they see fit and this is something that is perfectly natural in their schools. In many Danish technical schools this leads to teachers having the role more of helping young adults in their personal project of gaining a qualification. It would be worthwhile learning more about this approach in view of the problems associated with integrated learning, given the hypothesis that the learner - the person who must integrate his or her learning - best knows how to achieve this.

189. De Bruijn et al. introduce three closely-related projects in their report in order to clarify the teaching and learning aspects of integrated learning that might otherwise be taken for granted:

1) Project teaching in Danish craftsmanship and industrial production (DAHIP).

190. The emphasis of this project is inspired, at least partly, by an experimental approach to vocational education practised at the food and catering department of the Technical School in Hillerød, some 40 kilometres from Copenhagen. This experiment was called DAHIP (Danish Craftsmanship and Industrial Production); its curriculum and teaching methodology comes close to our interpretation of integrated learning.

2) Authentic learning within Practice Compensating Facilities: PKU

191. Because of a shortage of practical training places, necessary for the second part of vocational training courses, vocational schools organise practice compensating learning/training centres. We discuss two of these centres as examples of implementing authentic learning (which might be perceived as a form of integrated learning). The first example, organised by the food and catering department at the Technical School in Hillerød, is an institutional kitchen which operates on a commercial and semi-professional

basis under supervision of an instructor. The second example, established by the Copenhagen Commercial School, is the Niels Brock Centre, which operates four simulated companies and is part of a network of simulated companies, the SIMU-network.

3) *Learning by teaching at the Technology and Information Science Centre (TIC)*

192. The Technology and Information Science Centre (TIC) is a community centre which offers computer facilities and adult education in the field of computers, information science and desk-top publishing.

193. The main goal of this educational service of TIC is to offer early school leavers and students at age 18 who are threatened by unemployment and unable to find a job or training place a pathway towards regular vocational training by developing realistic vocational choice and delivering basic skills.

194. The basic pedagogical skill principle which is used is learning by doing, trial and error. At Hillerød the instructor gives explanations and assists trainees in performing their productive tasks. She gives feedback, trying to make students aware of the important criteria, events and risks of the trade. But in principle students are responsible for their own job.

195. Teachers and management of the centre emphasize the company character of the centre. Companies are operating on the simulated market of SIMU, trading with other companies of the network, making use of the facilities offered (mail, banks). Main communication means are "real" written and computerized invoices, memos, order forms, receipts, bank transactions etc. Every company presents its results once a year. Trainees get a real salary as a trainee (which is paid for by a collective fund, financed by compulsory contributions from companies), but they also get a simulated salary, which is to be spent in the simulated network. Strict house rules are implemented; office hours are strictly kept. There is an attempt to enhance good working habits and behaviour (keeping appointments; being on time; etc.).

196. Nevertheless, apart from the occasional visitor to the centre and the visits to firms who could be a possible location for a "real" practice placement, there are no contacts with the outside world. Also, trainees are, apart from the teachers, only co-operating with colleagues of their own age, which detracts from the image of an enterprise culture.

197. The Technology and Information Science Centre (TIC) has a staff of 80 teachers and craftspeople. Most of them combine general and pedagogical training with technical training. In total there are some 200 teaching-assistants on temporary government-sponsored jobs. A sponsored job/course takes 7 months. In this way, students can fulfil their obligatory activity in order to receive social support.

198. The activities of TIC fall into four fields:

-- Municipal services:

- Graphics department, which produces information material, posters ordered from municipal institutions. Also offers graphic courses.

- . Technical department, which repairs the equipment of institutions, schools, etc.
- . Personal Computer Course for personnel of various municipal institutions.
- . Information Science Centre, which gives advice to small companies acquiring computers and equipment.
- . Service and Support Department, which gives technical and operational support to municipal departments.

-- Courses for the Unemployed:

- . Basic computers for the young and long-term older unemployed.
- . Clerical courses.
- . Specialized courses (e.g. technical drawing).
- . Language courses for immigrants.

-- Educational Service:

- . Courses for schoolteachers, media and computer projects for school pupils, the media bus, software library, software development, guidance.

-- Cultural Activities:

- . Open computer workshop.
- . Association Service.
- . Data library.

199. The first aim of the program is to deliver to students insights and basic knowledge regarding computers (hardware and software). Students should know what is needed to work in this field, and also what employment opportunities exist. It also aims to develop sound understanding of structures and procedures, communicative and social skills and learning techniques. Apart from this a very important goal is to enhance self-confidence. Developing self-esteem is considered very important for these students.

200. The most important goal, however, is to give students opportunities to enhance and restructure their knowledge and skills, with regard to technical content (electronics, computers, software, etc.), social and communicative skills and self-esteem and self-reliance. By "acting as a teacher" autonomy, self-reliance and social skills are developed at the same time as language and communicative skills, conflict-solving skills, social responsiveness etc. In a teaching situation students have to prove themselves continuously. The identification with his/her role is constituted in the communicative process with the student or the client/customer and the positive feedback she receives.

201. However, in attempting to identify and structure daily life experience in learning contexts, it seems designers focus too much on simple nearby "home and household" situations which bear little challenge for solving (more complex) problems. The daily life situations, which are the main context for acquiring competence (knowledge and skills), seem to be too simple a representation of the range of contexts or situations that may exist in reality. In order to stay close to the experiences of students few attempts have been made to design more challenging tasks and problems which students

might or might not experience in the (near) future, but which demand acquisition and application of skills and knowledge with a more disciplinary structure (i.e. with a more complex declarative structure) in various (conflicting) situations. After all, thematic structuring of content with links to reality did not mean abandoning more disciplinary knowledge and schemes. The intention was to facilitate acquisition and application of these sources of knowledge by embedding and representing knowledge and schemes in real life settings which call upon a particular use of this type of knowledge.

b) France

202. The projects mentioned in chapter 3 were accompanied by theoretical considerations that justified turning away from conventional teaching and learning theory in the interests of efficient integrated learning. Referring to the programme of "Nouvelles Qualifications" Bertrand Schwartz, who is responsible for the outline planning of the project, speaks of a teaching and learning method involving the "court-circuit de l'ignorance théorique [...], ce phénomène étant défini comme ... par écrit" (Ginsbourger, p. 13).

203. In contrast, the reflections on the dual education and training of engineers were far more extensive and thorough. In overall charge of this aspect was Gérard Malglaive, whose ideas on education and alternance Ginsbourger summarizes as "La pédagogie de l'alternance... qu'elles requièrent" (Ginsbourger, p. 19). Malglaive is opposed both to an "alternance inductive" (which takes practice as its starting point) and an "alternance déductive" (which starts from theory). Instead, he proposes that an "alternance intégrative" be developed which takes into account the "dynamique structurelle des compétences": "les compétences sont un système complexe... ici l'ingénieur en formation". This "integrative" alternance is to be put into practice by "professeurs-practiciens" and "tuteurs", to whom Malglaive assigns the following tasks: "Les professeurs-practiciens... de la formation initiale".

204. The elaboration of this plan was accompanied on the one hand by theoretical research on the dialectics of knowledge and experience and questions of a "conceptualisation implicite", on the structuring patterns that arise from an individual's actions. On the other hand, sociological research attempted to interpret apprenticeships not only as an isolated stage in the life of the adolescent that can be determined by professional and pedagogical criteria, but as an element of social praxis which influences the learning process as an experiential background.

205. Ginsbourger does not disguise the fact that realizing this plan runs into two substantial obstacles that derive from the traditional training and apprenticeship structure. Conventional "Cartesian" teaching and learning proves resistant to efforts at reform directed towards integration. Also, there is a clear tendency connected to the mechanisms of social reproduction and hierarchy-formation for teachers to pass on their knowledge in the one-sided theoretical manner in which they themselves learned, and which is characteristic of their social awareness of themselves as theorists who are superior to mere practical types.

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c) The United States and Australia

206. M. Vickers gives an instructive overview of the variation in vocationally-oriented courses at a high school:

Table 1. Typical course offerings in a high school vocational program

Accounting	Communication	Heating and Air
Appliance Repair	Electronics	Conditioning
Audio-visual Communication	Computer Programming	Home health Aide
Auto-diesel mechanics	Construction masonry	Horticulture
Automotive Specialist	Diesel Engine	Machine Trades
Building Construction	mechanics	Medical Assisting
Business Info	Drafting	Microcomputer Repair
Processing	Electrical Occupations	Nursing Assisting
Carpentry	Electronics	Plumbing
Civil Technology	Food Production	Robotics Technology
Commercial Art	Gen. Merchandizing	Sheet metal
	Gen. Secretarial	Welding
	Health Assisting	

Source: National Occupational Competency Testing Program (reproduced in Hoachlander, 1994).

207. A rather restricted view of "integration" is that it simply involves amalgamating courses in similar fields, such as health assisting, nursing assisting, and medical assisting, thereby broadening vocational provision beyond narrow job training, and introducing students to a whole field of work - in this example, to the health occupations as a group.

208. Such reorganizations do not, however, improve the connections between academic and vocational teaching. Two of the most common approaches to academic-vocational integration involve asking vocational teachers to include more academic content in their courses, or asking academic teachers to use more "applied" examples when they are teaching vocational-track students. These two strategies are also limited, but they are widespread, because they involve nothing more than the adoption of new curricula.

209. A more radical approach to achieving academic-vocational integration demands that fundamental alterations be made to the organizational structure of the high school, in order to ensure that students are not divided into mutually exclusive "vocational" and "academic" groups. Such a division of the student population characterizes many high schools, because the schools arrange the instructional timetable in a way that makes it impossible for students to enroll in the more prestigious academic subjects if they are enrolled in vocational courses. In other words, "shop" classes clash with "academic" classes.

210. A second problem is that the standard approach to timetabling instruction for the vocational students separates their academic studies from their vocational studies. Typically, the timetable divides their school week

into two parts, with shop classes on some days and academic classes on others, or shop classes in the mornings and academic ones in the afternoons.

211. Alternatively, the timetable creates a week-about rotation, with students doing academic classes in one week and vocational classes in the next. Organizational arrangements such as these apply to all the students in technical high schools and to vocational track students in comprehensive high schools. Because of these arrangements, academic teachers working with vocational track have to teach classes in which the students invariably come from a very wide range of different programs. It is virtually impossible to relate the teaching of mathematics or science or English to vocational subject matter if the vocational students you have in your classroom come from fields as diverse as accounting, diesel mechanics, plumbing, nursing, and tourism!

212. As a contrast Vickers points to the practice in a "health academy": "In an academy, a group of four teachers works consistently with one group of students over a period of three or four years, and this structure creates many opportunities for teachers to articulate the subject-matter of their courses. Because each academy is focused on a cluster of occupations, it is relatively easy to integrate occupationally relevant material into each course. For example, in a health academy, English teachers may use novels and other textual material which reflect the culture of the medical world, and which introduce vocabulary related to the health occupations. Mathematics and science teachers are able to coordinate the order and nature of their topics to suit the pace of the health occupations course. The health occupations teacher can count on certain topics having been previously covered. Regular meetings of these teachers help them to identify problems that students are having. In some academies there are also summer jobs and other forms of structured work experience." Such a pattern of curriculum presupposes, however, something which is unthinkable in a disintegrated system, that the general dimensions of education are demonstrated in the medium of an occupation. The upper secondary school student specializes in his or her studies with regard to a particular profession, but is not oriented exclusively towards that specialization in a functional manner, but is educated comprehensively with reference to that specialization (see below).

"To ensure that classroom learning and work-based learning are thoroughly integrated also the PYAP-project which we discussed in chapter 3 work in each subject area actually replicates tasks that expert metalworkers are expected to carry out in their day-to-day work. For example, when PYAP students study English, they are learning to read and interpret technical reports, memoranda and manuals that were actually gathered from the firms themselves. As they move through the learning trajectory, the concepts and vocabulary become more complex, and they are required to write, rewrite and edit reports related to product manufacture and management in the metalworking industry. In metalworking classes, students cover the technical aspects of the job, while the social science curriculum deals with the social and pragmatic aspects of working life in this industry.

Each PYAP site has a coordinating teacher who works with the students, the employers and the schools. Coordinators negotiate with the employers regarding the student's training plans, check on student progress, visit each firm every week, and meet with the high school

teachers to help them integrate the classroom and firm-based work. As trained teachers and certified metalworkers, the coordinators have the skills required to relate to both worlds. Often, skilled metalworkers can do their jobs well, but are lost for words when it comes to describing the underlying concepts. PYAP coordinators spend time each week coaching the metalworkers in teaching skills, to make them better able to explain what they know.

High school teachers rarely have time to visit the firms where their students work. Despite the fact that the curricula used in PYAP are based on workplace examples, it can still be difficult for teachers to relate classroom activities to the student's experience at work in the firms. For example, teachers lack information about exactly what students are doing in the firms and how well they are performing there. To compensate for this, PYAP coordinators hold weekly group meetings with all the teachers who are teaching the PYAP curriculum.

Along the same lines is another example given by Vickers, this time from Australia: "In 1984 the Victorian government in Australia launched an ambitious program of reform which led to the amalgamation of all the secondary technical schools and high schools in the state, the re-organization of these schools into junior high schools (grades 7-10) and senior colleges (grades 11-12), the development of a unified curriculum for grades 11 and 12, and the creation of a single certificate (the Victorian Certificate of Education) to replace the HSC. This certificate would mark the completion of a full secondary education, but unlike the HSC, the new certificate would be explicitly designed to serve functions other than university admission. Since our concern here is with the integration of academic and vocational education, the most pertinent aspect of the Victorian Certificate of Education (VCE) is the fact that it developed a number of new courses which fused both academic and vocational elements.

These courses replaced traditional secondary technical school courses such as carpentry, metalwork, machining, baking & catering, textiles & needlecraft (and so on) with new courses which had a broader focus: for example, Systems and Technology, Technological Design and Development, and Materials and Technology. (This is a further indication of the tendency to connect integration with de-specialization when it is oriented upwards in a hierarchical fashion).

Creating a new, unified curriculum without eliminating the diversity associated with the plethora of courses being discarded was not an easy thing to do. A novel solution was adopted by the Victorian government: it created advisory committees for each of the new courses being constructed, and brought in all the stakeholders who had something to gain or lose from the elimination of old courses and the creation of a new one. Technical teachers, high school teachers, and TAFE instructors faced each other across the conference table. The technical teachers demanded a more serious approach to occupational skills than was customary in high school courses; the high school teachers demanded a literacy component (for example, a video presentation or a design brief) in every unit of every course. As one advisory committee member put it,

the approach was to "bring in all the voices to make the decisions we were all forced to have those other voices in no matter who they were".

213. The result of this process is a series of courses which are conceptual and at the same time practical. For example, the course known as *Materials and Technology* aims to "enable students to... develop an understanding of the relationships between the characteristics of materials and their selection and use... [but also to]... enable students to acquire, extend and apply a range of practical skills related to the use of tools, equipment, and machines." Students in this course are expected to design and develop products that meet specific human needs, and to "develop a positive self-image as creators, controllers, operators, and users of technology." In occupationally-oriented subjects, as in academic subjects, literacy is key. Students taking *Materials and Technology* are required to "develop skills in oral, written, and graphic communication of information related to the material studied."

214. Following the introduction of the VCE in 1988, these courses have become available in almost all secondary schools in the state of Victoria. The learning objectives outlined above are more than wishful thinking: they are actually embedded in the criteria used for each assessment task in the courses. Assessment in the VCE system is not based on testing, but rather on the completion of work requirements. In the past, grade 12 students prepared obsessively for their final exams. Now the completion of work requirements - known as Common Assessment Tasks or CATS - is the key to successful graduation from high school.

215. The designers of the VCE were determined to create a system that would serve a diverse student population. A key feature of the system, therefore, is its flexibility. Most grade 12 subjects have a common content which all students are expected to cover; student knowledge of this material is assessed under exam conditions. But in each subject a major part of the student's work is a product which is negotiated with the teacher, allowing students to develop an in-depth understanding of a topic which interests them deeply. From her first-hand observations of this system, Australian researcher Cherry Collins observed that under the VCE classroom practice has changed. With the focus on work requirements, students do more and teachers talk less, at least to the whole class. The teacher's job has developed beyond instructor into mentor, explainer, coach, co-problem solver, reader of drafts and re-drafts, suggester and encourager. It is hard work but different work with the student at center stage. The new problem, says Collins, is to get students to produce, not to remember".

216. In conclusion, two American examples are dealt with: "The relevance of REAL to this paper is that it represents a serious effort to develop a conceptual understanding of business theory, and at the same time to develop practical abilities in students by demanding that they actually start their own enterprises. Departing from traditional, teacher-driven methods of classroom instruction, this program helps students learn what they need to know in order to start and operate an enterprise. The program also provides practical support as the students actually carry out each step involved. The founders of REAL committed themselves to this approach because they wanted to help young people create good jobs for themselves in rural areas, where employment opportunities were scarce and often declining. Alongside this economic

objective was the educational goal of empowering young people to take charge (insofar as possible) of their own learning and their own futures.

217. To become successful entrepreneurs, students must acquire - and be able to employ - three broad sets of knowledge and skills. First, there are the technical aspects common to all businesses - from understanding pricing to constructing/analyzing cash flow statements. Second, there are the idiosyncratic requirements of each particular enterprise. These vary greatly, for instance, from an auto repair shop to a mail order toy company. And third, there are the "higher order" thinking and communication skills entrepreneurs need - from writing a persuasive business plan to designing and implementing a creative marketing strategy.

218. REAL operates almost exclusively in economically and educationally disadvantaged rural communities. Thus, it cannot be taken for granted that the students begin this program with strong basic scholastic skills, or a relevant base of knowledge and experience. How to help students with weak backgrounds master an area as intrinsically difficult and multi-faceted as entrepreneurship has been one of the key challenges facing REAL since its inception in 1985/86.

219. In an earlier phase of REAL's development, there was a stronger emphasis on mastery of theoretical business knowledge, but over time, experience with the program demonstrated that such knowledge does not automatically lead to correct business practice. For example, early in REAL's existence, a group of rural high school students produced (after months of intensive effort) a sound, formal business plan for their screen printing company. Included was a diversified marketing strategy employing everything from radio advertisements to targeted mailings. These young people ably defended their plans before the school board, a specially-convened panel of business experts, and other reviewers. Yet, when the time arrived to actually implement their marketing strategy, these students discovered they really did not have the concrete know-how needed to do what they had proposed.

220. Cases such as these made it obvious that REAL's initial reliance on standard business texts and traditional classroom instruction methods were not sufficient to accomplish the task at hand. Largely because of this shortcoming, the students (and their teachers) perceived REAL as just another class, another simulation, and another experience divorced from the world beyond the school walls. The founders of this program had to rethink and redesign the way in which entrepreneurial learning took place, and in doing so they turned to recent research in cognitive science, studies on the nature of professional socialization, and research on entrepreneurship itself.

221. A central issue was to determine how induction into the culture of entrepreneurship might be achieved. Experienced businessmen appear to have an instinct for asking the right questions at the right time, and for sensing that something is about to go wrong. Can this be acquired through classroom learning, or does it require years of practical experience? Donald Schön refers to practical capacities of this sort as "artistry in skillful practice", and he argues that it is particularly important in situations of uncertainty and conflict where problems are poorly defined or even invisible. Because the technical basis of this artistry is often evasive, it is difficult to codify in textbooks or transmit in lectures. It is more likely to be acquired, Schön

suggests, through activities analogous to apprenticeships or coaching, where the novice learns directly from the skilled practitioner.

222. People with a practical understanding of entrepreneurial skills and attitudes are most often found "out there" in the world running successful enterprises of their own. Accordingly, every REAL site now includes a community support team. Team members include local business people, relevant professionals (e.g. accountants and lawyers), and community leaders. Their direct mentoring of students and their support for fledgling enterprises has become a key feature of REAL."

223. Both the American and the Australian examples show how relevant the fundamental problems of integrated learning are when it comes to developing totally new education and training structures in which the competencies of both systems have to be integrated, or when it comes to stimulating new solutions to the training and education of problem groups (REAL). The doubts voiced as to whether non-practitioners can smooth young people's path to practice would be hard to find in a dual system. In such a system there is a tendency on the part of schools to separate what they do from the practical side by referring to the independent educational task of schooling.

d) Germany

224. A symptom of the situation in Germany is that the curricular methods are known as "ordering methods". Training and education schedules are worked out in complex negotiating procedures between all the partners in dual education and training. In spite of many attempts to make this process more scientific (through studies on qualification and teaching and learning practice from the social scientists and educational theorists), the schedules have remained chiefly characterized by traditionally-structured catalogues of material. When it comes to general subjects, there is a systematic domination of subject disciplines. In the case of technologies associated with individual occupations the systematic structures of occupational and professional activities predominate in the form of an encyclopedic image of everything which arises in the course of an occupation or may arise in it.

225. The negotiation procedure on training and education schedules is supposed to ensure that integrating learning sites is a priority from the outset. Firstly, a schedule is issued for the firm-based part. The school curriculum is planned on the basis of this and built up on a corresponding pattern. In this way, a parallelism is created which, instead of promoting integration, often only covers up disintegration. It is only in a few occupations that one may assume that trainees can be trained strictly in keeping with the order of topics specified in their training schedule. In many cases, the training schedule founders on the "work schedule", with the result that schools see themselves as the only learning site that can be responsible for systematic training and education. This contains a further disintegrative mechanism, since, given this awareness of themselves, schools find it even easier to bother little about what young people are learning and experiencing in the workplace. Schools are supposed to generalize, create models, form abstractions about what has been demanded here and there partially and randomly. The trainees themselves often experience acting in practice and learning in school as two separate worlds. (This is, moreover, an experience which turns up in all the national reports whenever they refer to dual learning

and work structures). The discrepancy between learning and work often leads to part of the skills training having to be given in so-called überbetriebliche Lehrwerkstätten [instructional workshops covering several firms] or directly in schools. In contrast, many forms of training are conducted in an industrial setting. Trainees notice little in the way of serious direct work experience in the opening stages. Young people are trained for months in workshops belonging to the firm and often confronted with tasks that have their origin in educational theory and have little to do with what they will later do in the firm. Finally, what counts in German dual training and education is often - above all in manual crafts - the traditional methods of master and apprentice, which consist mainly of demonstrating and explaining tasks which are then imitated and practised by the trainee.

226. The general educational problems of integration found in the dual system already indicated are the subject of heated debate. They have in the past given rise to many attempts to strengthen integrated learning. The reader's attention is directed to three tendencies:

1) Orienting students towards action and looking at work as a system

227. Reforms brought a wealth of new teaching and learning approaches to the fore, which were intended to realize the aims we have already referred to on several occasions (see, for example, Kutscha's guiding text method). What they have in common is the attempt to move away from the perspective of the impending fragmentation of content that factual and occupational systems tend to produce or organize around themselves, and to put real situations in the foreground by means of tasks and projects. When looking at such tasks therefore, one should ask what actional competence a form of teaching oriented towards action should strive to deal with in the tasks it sets. These may be divided into: subject, method, action, learning and social competencies. It is hoped that the subjects in the time-table, the curriculum itself, will concentrate on the specific and general development of these competences.

228. This intention often fails in the face of the socialization that teachers have experienced. School instructors are usually teachers and not practitioners. They feel themselves to be professionally responsible for the subjects and not for the profession as a whole, and - as I have already emphasized - this distance can be justified on theoretical grounds. In more recent curricula the conclusion has been drawn from this that teachers should not be overburdened. Instead of directing the entire curriculum towards the concept of "actional orientation", it is now a matter of carrying out repeated "action-oriented instructional units", that is, more limited projects, which have to be designed in co-operation with as many subjects as possible.

229. One of the major problems in adapting action-oriented models lies in their tendency towards formalism. In them the dimensions of competence are always separated out as if real practical problems presented themselves already broken down in that way. What is effectively described is not what someone must be able to do to solve a particular problem, but everything which might possibly play a part in problem-solving. Formalism makes it easy for many teachers to leave things as they are, since they are already putting the new ideas into practice in an abstract sense.

230. The vagueness of the concept of action orientation is also evident in the need to develop a specific theory for this model. In Germany system theory has played a prominent role in this. In order to give students an analytical tool for action their work is described as a system with various levels and exchange processes. The production process, for example, is explained to them in this way. However, the crux of the matter is that such explanations very quickly degenerate into Platonic models, that is to say, ideal or trivial explanations are given which do not help the trainee to realize exactly what the concrete conditions of his or her actions were. The instruments of teaching and learning are elevated from the experience of the students so rapidly that they are able to make little contribution to integrated learning.

2) Simulation in learning offices

231. A similar criticism may be made of German attempts to simulate working praxis in schools. The problem may also be studied in the reports from Denmark and the United States. A widespread experiment in Germany, particularly in the training and education of business students, is the "learning office". With the aid of the personal computer office work can be simulated down to the last detail.

232. There is no doubt that solving business problems in such a learning office promotes competence. Models are made comprehensible through physical experiences, problems can be formulated openly, the outcome is uncertain, the relevance of specialist knowledge is plain to see, and so on. Yet the learning office is only a substitute for real practice. The wealth of circumstances that have to be dealt with for real in practice cannot be transformed into a simulation without losing much of their force as problems.

233. At this point, one can also ask a critical question: is this the way things have to be? Is the norm of integration that is behind such a question not in itself problematic, because it proceeds from a unity of theory and practice? There are things that can be learned in a learning office which remain forbidden and distorted in practice, things which are done under extreme pressure of time so that they can seldom be studied and appraised.

3) Integrated learning as a teaching method for occupational pathways

234. At this critical point - or point where many criticisms are made - it is worth indicating the alternative that arises for the dual system.

235. The central problem of integration - as I formulated it for emphasis in 2.2. - consists of the question of how to connect action in practice and educating oneself with the help of school. If one accepts this, then one must recognize that the school has a task which is functionally different from that of the firm, and that the two learning sites can only act together if they allow students to have the experiences necessary to acquire competence. For the practice of training this implies something quite trivial which is not always guaranteed, namely that young people really are confronted with tasks during their training which are central to the independent conduct of their future occupation, that in practice trainees are dealt with as if they were already full colleagues. They would thus be allowed to work and at the same time do this in such a way that they could learn from their work.

236. For schools it follows that they should move the experiences their students have as a result into the centre of their curriculum. It ought to be practice which defines what should be learned to understand practice better. This sounds trivial but is anything but obvious. In many forms of training, and this is a consistent finding in surveys of trainees, there is an evident discrepancy experienced by trainees between school and praxis.

237. Some model experiments have shown how one must construct educational pathways in schools to make the tension between action in practice and education with the help of school into a productive one. Looking at the results of the collegiate school (Kollegschule) experiments, that is to say, looking at the sequence of "educational pathway curricula" developed there for example for joiners and electronic engineers, or gas and water installers, hotel personnel or doctor's assistants, the outcomes may be sketched as follows:

-- The overall aim is firstly to relate training at both sites in a real fashion, and not merely on paper. Then a curriculum should be drawn up which remains on the track of the real confrontation of subjective and objective elements in the individual's education, that is to say, a curriculum is constructed which is not primarily a curriculum for students, but which supports the real curriculum of the students. And finally there is an attempt to integrate subjects horizontally with reference to a meaningful sequence of outline topics. This does not mean that subjects are dissolved, but that they have to deal with common problem complexes. The procedure of developing curricula close to school level by teams of teachers was broken down into the following steps:

- i) Firstly, it is a matter of gaining as full a view as possible of what trainees experience and learn in their work practice. What are the tasks that they are really confronted with, and in what order do they come? For which central occupational challenges can key qualifications be developed?
- ii) Then it is a question of understanding the structural element of these tasks from the point of view of the firms. Why are trainees confronted with these tasks and not with others, and what problems that the firm itself must solve are disguised by the tasks and the prevailing patterns of their solution? As well as defining learners' key qualifications, it is a matter of determining their key problems, which are posed in the firms and which decide what the trainees have to do and how they do it.
- iii) If one has understood learning and work in this way, then one can see the students' path as a sequence of such key problems and plan the curriculum accordingly. Problem by problem the question has to be answered as to the significance of the problem in the firm and how the student is confronted with the problem? What abilities does the student expect to develop in relation to it and what are the strategies of the firm? The extensive description of the key problems of firms and of training produces a structured view of the subjective and

objective educational path before one asks which school subjects should be addressed and what they should contain.

- iv) Only after representing the key problems can one ask what contribution the various subjects may make to dealing with a problem. Only on this basis can one succeed in preventing the subjects from tending to divorce themselves from their occupational tasks by building up their own systematic structures. For six months all subjects refer to a common topic. They each show what they have to offer from their particular viewpoint in terms of explaining a problem, evaluating it and finding a practical solution. This implies that in every case all aspects of general education can be brought into the process - the economic and the technical, the communicative and the historical, the scientific and the political, the intercultural, ethical and aesthetic. Subjects are not integrated with reference to some educationally devised individual problem, in other words at a point where interdisciplinarity can be achieved relatively easily, but with reference to the central problems met at work and the demands for qualification in the occupation concerned.

In this way a mutual context of reference points is produced, one which takes in:

- theory and practice,
- subjective prerequisites on the part of the students and objective demands on the part of the firms,
- differentiated specialism and task-oriented all-round ability;
- a form of education in the medium of the occupation itself that is different in design from occupation to occupation.

- v) Now a number of things become possible. Simulations that can be conducted in school to complement the practice in firms in a meaningful and necessary fashion can be defined. Schools can define tasks for the practice in firms. Projects can be defined in a common perspective in which the contributions of different subjects come together periodically and which the students can use to evaluate what they have learned in solving tasks in the subjects. Now it is possible to incorporate practical experiences in a critical fashion in school. Students have the opportunity to become active learners because their practical experiences are taken seriously.

Such an educational methodology has remained to date the exception rather than the rule in Germany (see Kutscha and Gruschka 1993 in Kutscha).

The lack of an all-round educational method in ordinary schools corresponds to the much talked-of absence of an all-round

vocational education. The greater part of the educational debate worries away in a literal-minded manner at the symptoms of disintegration or propagates concepts that rapidly slip into empty formalism.

It must be admitted that the inadequate examples in dual education and training are superior to the alternatives outside that system. Such alternatives usually suffer from their chronic deficiencies in terms of practice. To put it in an exaggerated way, they often struggle in vain to find their occupational subject, to find a concrete perspective on work and work experience that the students will be able to follow and from which integrated learning might proceed. The distance from such vocationally-oriented and pre-vocational educational pathways to the socializing pressures of the concrete demands of the workplace does allow students a relatively high degree of freedom in their instruction, but it is also responsible for many of the more artificial integration tasks. In this sense - as the German examples show - only dual training and education offers the pragmatic opportunity to arrive at a teaching method and a framework for fully-developed integrated learning.

5. Conclusion and evaluation

238. The guiding questions of this report proceeded from the aims of the OECD itself. They allow the significance of individual efforts to be recognized. If the OECD wishes to promote developments which will serve the interests of democracy in societies organized on market economic principles, then for education in our context this means:

- Integrated learning must not serve to separate and select, rather it must contribute to the equality of opportunity.

There is no doubt that the majority of the projects analysed are oriented towards this goal, but they take place in a context which forces the projects to smooth the way for new inequalities.

- Integrated learning must not continue the discrimination against vocational education by "superior general" education, but must be able to break up both of these.

One can see this in most of the projects. Many of them are motivated by the desire to overcome the separation between the vocational and the academic. However, since integrated learning represents a "chameleon term" (as Vickers puts it), it can equally well be cited in relation to students obtaining higher qualifications in the framework of vocational training as it can be as a form of rescue for the failures of social policy. As a result, it can seem time and again, perhaps unintentionally, a concept that devalues vocational education.

- Integrated learning must take the opposition of theory and practice as its central theme in such a way that the increasing tendency towards an academic discourse on the circumstances of young people is experienced as one open to being shaped and changed.

This assumption is clearly underdeveloped in the projects. In many cases, knowledge is played off against ability using integration. Behind too one-sided an orientation towards competence lurks a hostility to theory - the bad old utilitarianism of vocational education. Everywhere integrated learning also has to fulfil occupational policy options, it finds itself in what tends to be a poor environment to criticize the conditions of work and life, or to adopt a critical distance towards economic imperatives. Conforming to that environment then appears to be the only option. Unfortunately, many such projects are not in a position to translate this proximity to the business world into occupational security.

- Finally, integrated learning must represent the occupational world in such a way that it also reaches the general problems of the non-occupational aspects of life.

The theoretical reflections which have been pursued in the OECD countries point to the way in which this aspect of integrated learning is in practice often only considered after the fact and then only half-heartedly. Perhaps this aim is of necessity utopian under the objective conditions of training and work today. How should current integrated vocational education, itself on such uncertain ground, take on the job of preparing young people for the many problems of the modern world as well, in other words do more than merely making them sensitive to those problems?

239. Nevertheless, anyone who has an interest in the further development of vocational education must try to promote the dissemination of integrated learning across the whole range of its aims, despite all its contradictions and paradoxes.

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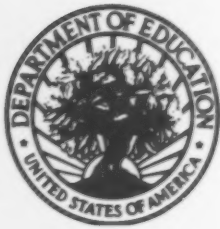
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